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Observations respecting the Nature and Origin of the common Species of Disorder of the Spine: with Critical Remarks on the Opinions of former Writers on this Disease. By EDWARD HARRISON, M. D. formerly president of the Royal Medical and Royal Physical Societies of Edinburgh, &c.

OF all the maladies by which mankind are assailed; none is more afflictive and distressing to relatives, or more deplorable and mortifying to the sufferers themselves, than spinal distortion. Persons so affected become objects of neglect or aversion; and, being rendered unfit to discharge with propriety the several duties of life, they remain burthens upon their friends. To a generous mind nothing can be more painful and humiliating than to feel that in him the chief purposes of existence have been defeated, and that he is doomed to consume his days in wearisome inactivity, or in unproductive occupations.

That such must be the necessary consequence of this disease will be evident, if we take a survey of the important offices of the spine, and of its influence over the complicated functions of the thoracic, abdominal, and pelvic viscera. Curvatures in the cervical bones produce numbness and paralysis of the arms. Injuries received in any part of the spine induce loss of sensation, and of power of voluntary motion in the lower limbs. Different internal organs are made to participate, according as the malady is seated higher or lower in the back. Pressure from dislocation of the cervical vertebræ impedes deglutition

and respiration, by reducing the diameter of the œsophagus and trachea, as well as by disturbing the action of their muscles and nerves. Diminished capacity of the chest, the unavoidable consequence of its deformity, gives rise, by displacing or squeezing the enclosed parts together, and preventing the convenient exercise of their functions, to palpitations of the heart, to dyspnœa, cough, and various distressing perceptions, which are followed, in process of time, by organic derangements of the heart and lungs, by consumption, asthma, hydrothorax, and other chronic disorders. When the luxated dorsal vertebræ compress the spinal cord, there is generally a constrictive uneasiness about the stomach, and a depraved secretion in some of the abdominal organs. Bony distortions of the thorax mechanically force the liver, the stomach, and the contiguous viscera, out of their natural places: hence arise painful sensations in them, and irregularity in their functions. The impediments thus created are followed by organic mischief in the parts, which terminates at length in the most distressing complaints. A displacement of the lumbar and sacral bones leads in the same way, to very obstinate affections of the bladder, rectum, uterus, and external genital members.

Till the true nature of the disorder has been discovered in these cases, the most discordant opinions are advanced by the faculty, and the patients are tortured by the most opposite practices. A malady which is attended with the most disgusting appearances, and produces such a variety of obstinate symptoms, cannot be too soon or too carefully resisted. A vigorous opposition to the very dawn of the complaint is of greater consequence, because no effectual means have hitherto been attempted to remove the deformity, arrest its progress, or avert the maladies which proceed from it. In order to show the truth of these remarks; and prepare the reader for a more successful method of cure, I propose to give a short account of the principal writers who have delivered their sentiments upon this disorder, their respective opinions, and the different practices which they have employed to subdue it.

Society is under great obligations to the late Mr. Pott, for calling the attention of his brethren to an investigation of the causes and treatment of one of the most obstinate and distressing complaints to which the human frame is exposed. This subject, though much agitated in the early ages of mankind,* had been unaccountably neglected in modern times. Mr. Pott

* See Galen, Avicenna, &c.

brought it again before the public, in his valuable Remarks on Palsy of the Lower Limbs.* So much deference was paid to his appeal, that he had the satisfaction immediately to succeed in rescuing several miserable victims out of the hands of unfeeling and rapacious quacks, who had till then engrossed to themselves the whole care and management of these unfortunate sufferers. The eminent station of this accomplished surgeon enabled him to treat many patients, and enrich his Remarks with several dissections of persons who had sunk under the complaint.

"The true cause of the disease," he observes, "is a morbid state of the spine, and of some of the parts connected with it; which distempered state of parts will, upon careful inquiry, be always found to have preceded the deformity some length of time.' "A morbid state of parts previous to deformity, caries, or curve, must be allowed: every complaint of the living, and every appearance of the dead, prove it beyond contradiction or doubt. All the general complaints of persons afflicted with this disorder will always, upon careful inquiry, be found to have preceded any degree of deformity, to have increased as the curve became apparent, and to have decreased as the means for relief took place. The pain and tightness about the stomach, the indigestion, the want of appetite, the disturbed sleep, &c. gradually disappear, and the marks of returning health become observable, before the limbs recover the smallest degree of their power of moving."

"That this curvature, which is always from within outward, is caused by the erosion or destruction of part of the body, or bodies, of one or more of the vertebræ; by which means that immediately above the distemper and that immediately below it, are brought nearer to each other than they should be; the body of the patient bends forward, the spine is curved from within outward, and the tuberosity appears behind, occasioned by the protrusion of the spinal processes of the distempered vertebræ."

"That, without this erosive destruction of the bodies of the vertebræ, there can be no curvature of the kind which I am speaking of, or, in other words, that erosion is the *sine qua non* of this disease; that, although there can be no true curve without caries, yet there is, and that not unfrequently, caries without curve.' †

* Chirurgical Works of Percival Pott, Esq. vol. iii.

† Pott on the Palsy, &c. vol. iii. pp. 427, 457, 486, 493.

These passages might be confirmed by reference to several others. Having extracted them from his last Essay on Spinal Maladies, it is reasonable to conclude that they contain a faithful record of his latest sentiments on the subject. Had any subsequent change of opinion taken place, it would doubtless have been recorded in the "Notes and Observations" of his respectable editor and relative, Sir James Earle.

It appears from these extracts, and from the spirit of Mr. Pott's writings, that in his estimation, caries formed a necessary and essential part of this formidable malady. We shall take another opportunity to prove that paraplegia can appear in its most complete form, independently of caries; and it is equally certain that caries of the vertebræ* is frequently unaccompanied with paraplegia.

We are instructed in the foregoing passages, that spinal complaints affect three different structures,—the bones, ligaments, and cartilages. The last are brought to participate during the progress, and cannot therefore be allowed any share in the original formation. Though Mr. Pott always found disease in the "ligaments,"† and "sometimes in them without any apparent affection of the bones,"‡ he unaccountably overlooked them, and limited his curvative indications to the morbid state of the bones. In so doing, he reasoned upon a narrow basis. Admitting his own statement in its full extent, I think we are still bound to pay some regard to the ligaments. It however appears, from later dissections, that the vertebral bones are not always enlarged, or otherwise disordered, even when they are accompanied with a greater or less degree of deformity and crookedness of the spine.§ Many skeletons, showing lateral, posterior, and anterior curvatures, may be seen in the anatomical museums; several of them so exceedingly mis-shapen, as to leave no doubt as to their having occasioned death, by interfering with the functions of the spinal marrow, the thoracic and abdominal organs. In some, the vertebral bones and cartilages show no other signs of disease than such as arise from unequal pressure: they are hard, firm, sound, and, where free from pressure, are of the natural size. In order to form a curvature, the bones and cartilages must necessarily be fuller on the outside and compressed on the inside. The bones are even unnaturally separated in some

* Lieutaud, Morgagni, *Lond. Med. Observat.*, De Hæn, Stork, Bacchinus, Lecat, Aubertus, Blanchard, Hildanus.

† Pott, vol. iii. p. 427, 428, 438. ‡ Vol. iii. p. 482.

§ Vol. iii. p. 483.

parts of the external bow, yet nothing like ulceration had taken place.

According to this view of the subject, we must direct our attention to some other tissue to discover the true cause of spinal complaints, and I am of opinion that we shall find it in the connecting ligaments, "which seem to have lost part of their power of holding the bones together."* These get relaxed, and suffer a single vertebra to become slightly displaced. The column now losing its natural firmness, other bones begin to press unduly upon the surrounding ligaments; they, in turn, get relaxed and elongated, by which the dislocation is increased and the distortion permanently established. The direction becomes lateral, anterior, or posterior, according to circumstances; but the malady has in every instance the same origin, and requires the same mode of cure.

It appears to me that, when the spinal trunk gets too infirm to maintain the weight of the head and shoulders, the distortion inclines to the lateral form, being encouraged to take that direction from the resistance given by the superior spinal ligament. The anterior or internal curve, as far as my experience extends, has always been confined to the lower cervical and upper dorsal, or to the lumbar vertebræ. The spine is depressed in both instances, appearing to have sunk under and been crushed downwards by an oppressive and overwhelming burthen. When it arises, in a weakly constitution, from the exertion of pulling, lifting, or carrying, the protrusion, from the force employed, is nearly backward; and thus is laid the foundation of the posterior or outward curve. This is the simple and real origin of our spinal deformities, except in some rare instances, where they begin in the vertebral or cartilaginous structure. On this principal we can easily understand why people so often recover from spinal affections, and carry about with them the visible effects for many years. If the primary mischief begun in bone, as Mr. Pott teaches, or in cartilage, according to others, I think the affection would be very seldom cured, either by the unaided efforts of nature, or the best assistance of the healing art. "No degree of benefit or relief, nor any the smallest tendency towards a cure, is to be expected until the caries be stopped; and the rotten bones have begun to incarn: the larger the quantity of bones concerned, and the greater degree of waste and havoc committed by the caries, the greater must be the length of time required for the correction of it, and for restoring to a sound state so large a

* Pott, vol. iii. p. 438.

quantity of distempered parts."* When any thing like this degree of caries and rottenness occurs in the living body, the matter generated can never be absorbed. In defiance of the best efforts of the constitution, it will most certainly burst forth and lay the foundation of very tedious, if not fatal, drains from the back, groin, thighs, or hips.

The practice of Mr. Pott arose, by an obvious induction, from his own premises. His object was to excite inflammatory action by caustic issues, and thereby induce anchylosis, or union among the morbid bones That such treatment is useful at an advanced period, after caries is actually formed, may be agreeable to sound practice, though it has never obtained the universal approbation of medical men. Professor Rust,† remarks, that numerous observations and long experience have proved to him that issues rarely produce the desired effect, and that they even frequently accelerate the progress of the disease in a late stage. At an early period, while the disorder is confined to ligament alone, the practice of Mr. Pott is highly objectionable, because it prevents the application of other modes better calculated to restore the sufferer to his natural figure and former health. It cannot be denied, nor do I wish to insinuate, that patients have not got well upon this plan. Caustics, by stimulating, encourage the muscles and ligaments to act more energetically, by which they sooner regain their lost tone and vigour. The curative process is further expedited by the rest to which invalids must to a certain degree submit, while smarting under the pain of caustics. In many cases, Mr. Pott found it necessary to do more than apply caustic issues: he actually confined his patients to bed or to an horizontal situation, during the greatest part of the cure; as they could not bear to remain in an upright position.‡ In all these recoveries, the subjects of them remain through life in puny health, because, the bones continuing displaced, and some of the viscera being necessarily subjected to injurious pressure, the important functions of the spinal cord are imperfectly discharged, owing to the difficulties it meets with from the altered form and direction of the medullary canal.

"The deformity remaining after recovery is subject to great uncertainty and considerable variety, as it depends on the degree of caries and the number of bones affected: in general, it may be said, that where one vertebra only is affected, and the patient young, the curve will in length of time almost

* Pott, vol. iii. p. 474. † Professor Rust's *Arthrocacology.*

‡ *Observations on the Cure of the Curved Spine, &c.* by James Earle, Esq. p. 28.

totally disappear; but, where two or three are affected, this cannot be expected. The thing aimed at is the consolidation and union of the bones, which had been carious and are now become sound. This is the *sine qua non* of the cure, and this must, in such cases, render the curvature, and consequently the deformity permanent. The issues will restore the use of the limbs, but not the lost figure of the spine."

"That, when two or more vertebræ are affected, forming a large curve, however perfect the success may be with regard to the restoration of health and limbs, yet the curvature will, and must, remain, in consequence of the union of the bones with each other."*

It is clearly apparent, from the foregoing quotations, and the candid admissions of Mr. Pott, that he never attempted to restore the back to its natural figure. Such an happy result never came under contemplation; nor could it, consistently with his ideas, form part of the curative plan. Believing, as he did, that the mischief always began in the bodies of the vertebræ, his efforts were confined to prevent ulceration, to cure it when present, and to join the bones permanently together in their curved form by an immovable union.

Had Mr. Pott attended carefully to the incipient stage, it is more than probable he would have found that the affection generally begins in the ligaments, and passes from them to the bones and cartilages. It is of the greatest importance to keep this distinction constantly in view, because the knowledge of it leads to a marked difference in practice. At this period, the complaint, according to my experience, is more certainly curable than many others; and, what is most encouraging, *the spinal column is made wholly to recover its natural form and powers.* Instead, therefore, of sustaining the miseries of an infirm constitution for the rest of life, and carrying deformity into all companies, the individual returns into society in as perfect health and shape as if he had never been afflicted.† That such has been the pleasing result of the new method, is abundantly proved by experience, and can be confirmed by many living witnesses. Had the disorder, in any of these examples been attended with caries, very different must have been the result. The complaint, instead of submitting to the means employed, would either have gradually increased, or, had a cure been at last obtained, there would, for obvious rea-

* Pott, vol. iii p. 478, 491.

† This subject will be prosecuted in successive essays, till the author shall have fully explained his ideas of the disorder and its treatment.

sons, have been no reduction in the tuberosity. The inevitable consequence must have been a mis-shapen form, and its attendant evils.

A cure conducted agreeably to the foregoing principles leaves the patient in good health, and in the enjoyment of his natural shape. Where it has been produced by issues, how different is the result! In such instances, the curvature, and consequently the deformity, remain permanent.

"These observations,"* says Sir James Earle, "and others of the same tendency, added to the many melancholy instances which I have seen after a cure has been effected by issues alone, had long obtruded unpleasantly on my recollection. Prolonging life merely to lengthen out a miserable existence, and enable a wretched being to crawl a little longer on the earth, appears very unsatisfactory, and stopping short, if the idea be indulged, that, by any assistance from art, more may be done. I have often thought it would be a most happy circumstance could we go a step further, and *cure the deformity so well as the disease;* for, besides the disgusting appearance of the crookedness which remained, want of health, debility and inactivity, usually accompanied it: and another very material consequence resulted from it,—namely, that the largeness of the remaining curvature rendered the spine mechanically weak; which, probably, being added to a tendency to the same softness of bones as was the foundation of the original malady, was the efficient cause of the disease being liable to return. This was a very strong and additional reason why the improvement of the form of the spine should be equally the object of our attention with the cure of the disease."

It does not excite surprise that Mr. Pott, chiefly conversant with the worst and most obstinate cases, was led to believe that the disorder always began in the bones. These were, as he thought; enlarged, and pressed upon the cord. Having been induced, for reasons which he has not fully explained, to abandon this opinion, Mr. Pott did not afterwards attempt to account for loss of motion in the limbs. He contented himself with asserting that it bore no resemblance to the true paralysis of the same parts. Sir J. Earle, in his anxiety to supply the defect, ventured to go no farther than to revive the discarded opinion of his preceptor. I mention this circumstance as a proof that little progress had been made in the pathology or treatment: the great authority of the master seemed for a time to over-awe and bear down opposition.

* *Observations on the Cure of the Curved Spine, &c.*

One of our latest writers imputes the disorder to pressure from an inflammatory increase of bulk in the fibro-ligamentous substances interposed between the vertebræ. He was induced to give up the opinion of Mr. Pott, because bony enlargements of the spine are seldom found in the dead body.* We have little difficulty in joining our testimony to that of Mr. Copeland, in cases of external violence. It is, however, uncertain whether, in these instances, the inflammation commences in bone, cartilage, or membrane. The species to which I wish to draw attention, makes its attack so insidiously as not to be discovered till a long time after its invasion. It exhibits none of the local characters of inflammation, nor is it accompanied with pyrexia. This, which is the common variety, seizes upon relaxed fibres, or persons accidentally debilitated. I am enabled, from the treatment of many such cases, to assert that, they are wholly unconnected with inflammatory diathesis, and very seldom originate in a morbid condition of the vertebræ.

In order to understand the true origin and injurious effects of these disorders, we must premise a cursory survey of the operations which the spinal column and its contents are destined to perform in the living animal. The nine or ten pairs of nerves which issue immediately from the brain, seem to be chiefly occupied with conveying perceptions to the sensorium commune. The thirty-nine or forty pairs which arise out of the spinal marrow, communicate the power of feeling and voluntary motion to the limbs and muscles of the trunk and head. They, in conjunction with the ganglions and great sympathetic nerve, supply the sanguiferous system, the thoracic and abdominal viscera, with the principal share of their nervous influence. By experiments performed upon living animals, we learn that these several organs continue to execute their appropriate functions long enough after all connexion with the brain has been destroyed by decapitation, to induce us to believe that they derive their predominant energy from a different source. This seems to be the spinal marrow; for, when it is removed, the abdominal and thoracic organs soon cease to act. We are therefore led to conclude, that, although the animal functions are performed by the brainular nerves, those of organic life, or such as are only intended to support the machine, are executed by the spinal nerves. In this view of the subject, an healthy disposition of the spine is indispen-

* Copeland on Diseased Spine. Gortz *de Morbis Ligamentorum*

sable to the well-being of the individual. That the inference rests upon experience we shall be able to prove; by taking a review of the principal symptoms which occur in this disorder. When it affects the superior cervical bones, deglutition is impaired, from pressure made upon the cervical nerves in their course to the pharynx and œsophagus. For the same reason, a dry teazing cough and difficult breathing are occasioned by pressure upon the nerves in their way to the larynx and trachea.

Projections in the cervical bones affect the arms with numbness, debility, spasmodic twitchings, and paralysis. They also produce uneasiness in respiration, with palpitations from slight causes. In the dorsal vertebræ, they induce a girding sensation over the stomach, as if it were tied with cords. There is also indigestion, and oftentimes vitiated appetite. The secretion of bile becomes diminished, the countenance looks sallow, and the patient labours under many symptoms of jaundice. The belly is obstinately constipated, and the rectum refuses its office. The feces are often slimy, whitish; or clay-coloured. He gets feverish, is restless, emaciated, and affected with many symptoms which resemble consumption. The kidneys secrete little urine, and the bladder loses its expulsive faculty. In whatever part of the back the curvature is situated, the lower limbs are apt to be affected. Slight pressure upon the spinal cord produces debility and fatigue in walking. The legs cross each other; the patient is liable to stumble, and cannot go straight to any point. Greater pressure occasions muscular spasms, numbness, restlessness, and clammy sweats. A still greater pressure produces inability of motion, and complete paralysis of the limbs.

The numerous, obstinate, and complicated maladies enumerated above, are truly appalling. They exhibit spinal complaints in a new light, and claim for them an attention which they have not hitherto received. Whether we consider them as giving an unseemly appearance and laying the foundation of delicate health, or regard them as the fruitful parent of many other formidable disorders, the subject is worthy of the most rigorous investigation. Happy will it be for our contemporaries and successors, if a complaint almost universally prevalent in the middle and higher classes can be subdued so as to leave behind it no vestige of its former existence. In order to accomplish the object, we must endeavour to make out the cause, by tracing the different and apparently unconnected symptoms to their true source. Perplexing as the inquiry

may seem at first sight, we are inclined to believe that it admits of explanation upon anatomical principles. In the natural form of the back, the nerves meet with no impediment in their passage from the cord through their proper foramina in the several vertebræ. Distortion of the spine produces an alteration in the canal under it, and the vertebral holes are necessarily forced into unnatural directions. In consequence of these changes, the tender substance of the cord gets pressed against the hard sides of its sheath. The nervous filaments which issue from it, having to travel over a longer course, become unduly stretched, and encounter angles and projections in their way through the bony holes of the vertebræ, by which their energies are impaired, interrupted, and morbidly affected. We have already shown that the spinal nerves have been traced to all the abdominal and thoracic organs, to the sanguiferous system, to the upper and lower extremities; also to the trunk of the body, the neck, and outside of the head. When we contemplate this distribution upon anatomical and pathological principles, we cease to be surprised that luxation of the vertebræ should produce such an endless train and succession of perplexing symptoms. The extensive range of the spinal nerves, and momentous offices they are destined to perform in the animal fabric, afford an easy solution of our difficulties. Not that all the symptoms and sufferings enumerated were ever encountered by any individual.

It has been already declared that the symptoms vary according to the situation of the curve. Organs supplied with nerves from a higher part of the spine than the seat of disease, are seldom affected. In slight cases of pressure, even the thoracic and abdominal members, which derive their nervous influence from below the distortion, are but little disturbed. The symptoms, in all these instances, are chiefly confined to the lower extremities and the viscera which receive their nerves immediately from the spinal curvature. In order more clearly to explain this part of our subject, we must premise, that the neck consists of seven flexible vertebræ; the back contains twelve, and the loins five. From each of these vertebræ issues a pair or bundle of nerves; one portion of which diverges to the right, another towards the left side, and the remainder run into the body. From the os sacrum arise five more pairs of nerves. It follows from this calculation, that thirty-nine pairs, or seventy-eight nervous cords, each including many distinct filaments, originate in the spinal marrow. Having passed through as many proper holes in the vertebræ, they seperate into minute

fibres, and are distributed over the greater part of the body, to regulate and control the most useful and necessary functions of animate beings. When any of the vertebræ become displaced or too prominent, the patient experiences inconvenience from a local derangement in the nerves of the part. He, in consequence, is tormented with a train of nervous symptoms, which are as obscure in their origin as they are stubborn in their nature; they have therefore been justly denominated the *approbia medicorum.* A sedulous examination into morbid anatomy having enabled us to disclose the latent sources of other ailments formerly concealed in impenetrable darkness, we may look forward with confidence to a similar result with regard to several nervous complaints, by directing inquiry to the spinal column and its delicate contents.

According to this view of the subject, the obvious indication for the cure of spinal affections consists in restoring the displaced bones to their natural situations, that the spinal cord and its nerves, relieved from injurious pressure and disturbance, may be re-instated in their former abilities. In all the cases hitherto treated agreeably to these principles, the success has been complete. The effected organs to which they run, being no longer under the influence of diseased nerves, gradually recover their healthy state and proper functions.

Mr. Baynton, having being frequently disappointed in the cure of these complaints by treating them according to the ordinary modes, was led to devise another course. He has favoured us with his practice in twelve spinal cases: of these, one died; eleven recovered and regained the use of their limbs. The process took up from seven to fifteen months, and the projection was reduced in every instance; in some it is asserted to have been removed. He imputes the want of success, where his treatment failed, to previous anchylosis of the displaced bones. These cases, partly drawn up by himself, and partly by unprofessional friends, are not sufficiently detailed and circumstantial to enable us to form a clear and satisfactory opinion either in regard to the process adopted, its success in reducing the enlargement of the back, or the degree of constitutional health to which the patients were afterwards restored. In all these particulars the treatise is very defective and unsatisfactory. We are, however, under great obligations to the candid author for making us acquainted with a plan which promises to be extremely advantageous in the management of these and other obstinate complaints. It consists in placing the patient horizontally upon a firm and unyielding mattress, where he is

to remain constantly recumbent during the whole process. He is not accommodated with a pillow to support the head; nor is he to be moved in the least, for the most necessary occasions. All fears of the health suffering under this mode have been happily removed, by the successful issue of the different trials. In every case where it has been properly conducted, the patient soon became easy, cheerful, and regained his rest. Appetite and digestion improve under the confinement. In general, there is increase of flesh, and a marked improvement of countenance.

The intention of the plan is to afford the "softened bones of the vertebræ" an opportunity for recovery, and make themselves able to support the weight of the parts above. So long as the column remains perpendicular it is capable of bearing considerably more weight than after it has become oblique. In order to restore the strength of the spine, the person is to be laid flat, to give the "softened bones of the vertebræ" a better opportunity to recover themselves. Until the enfeebled spine is relieved from its natural load it cannot get tone, because the weight of the head and shoulders prevents the benefit to be expected from any mode of treatment. A system of resting will accomplish cures after the failure of drains and machinery. It may be observed, that Mr. Pott, though he takes little or no notice of the matter, thought it necessary to confine his patients in bed, or the horizontal posture, during the greatest part of the cure, as they could not bear to remain in an upright position.* The length of time required to produce the cure, varies, as we have already stated, from seven to fifteen months. At the end of the limited period, the patients were allowed to rise and take exercise, according to their ability. We have not been informed by the author of any relapses, but such occurrences are asserted to have happened from other quarters. They were probaly owing to the want or neglect of proper directions in regard to the care and precautions which should be observed for some time after the reclining method has been discontinued. No means were used to remove the tenderness and pain of the back. These were soon subdued by rest alone. In no instance were external applications wanted. Internally, the liquor calcis muriatæ was administered, to increase and consolidate the ossific process. Besides this remedy, bark, and medicines to obviate costiveness, were also employed. It is difficult to say how long the resting should be continued; nor can we lay down

* See Sir James Earle's *Observations on the Cure of the Curved Spine.*

any rules with confidence till we have had greater experience. In the slightest cases, the recumbency must be continued five or six weeks after the removal of all tenderness. Where disorganization of the bodies of the vertebræ has taken place, the rest must be prolonged two or three months after every inconvenient symptom has disappeared.

Such is the plan recommended by Mr. Baynton. It consists, as we have already observed, in placing the patient horizontally upon a mattress, without bolster or other elevation, and continuing the same position till the spine shall have recovered firmness enough to support the head, shoulders, and chest. This is the whole object contemplated, and such are the means employed to attain it. When the process is finished, no measures of precaution are advised to prevent relapses. The patients arise from their couch, and thus ends the treatment.

Mr. Earle, laudably solicitous to maintain the high character of his deceased ancestor, has for that purpose voluntarily entered the field of controversy with the Editors of the Medical and Surgical Journal.* In the review of Mr. Baynton's essay,† they had taken occasion to extol his "humane" method, compared with the severity of Mr. Pott's treatment of spinal complaints. In order to bring the matter fairly before an impartial public, Mr. Earle was led to analyze Mr. Baynton's twelve cases, published in favour of the resting process, and to accompany each of them with his own remarks. He reports that only three of them are of the description alluded to by Mr. Pott; and in them the previous employment of caustic issues had, he thinks, removed the diseased condition of the bones. The merit of the resting-plan was, therefore, limited to expedite the cure; for which intention he thinks it well adapted, where "softness prevails in the bones." In all the remainder, there was either no disease of the back, or it consisted of a muscular affection only. In confirmation of this assertion, he introduces accounts of three cases which fell under his own management. In these the spine was greatly bent, and the lower extremities more or less affected. One appeared to arise from hydrocephalus internus. The second occurred to a military officer.

"On the day after exposure to great fatigue and being wet through for many hours, he had an attack of fever, and, on attempting to walk, he found stiffness in his legs and inability to move them. Soon afterwards he was incapable of expelling

* Vol. xi. No. 41, *Edinburgh Medical and Surgical Journal.*
† Vol. x. No. 39.

his urine, and his feces at times passed involuntarily. That these symptoms gradually increased, until the lower half of his body was completely palsied." He had suffered four years when Mr. Earle was consulted. He was miserably helpless. His lower extremities were cold and benumbed, and he had lost all power of directing his steps. The whole vertebral column was slightly arched in the form of a half hoop, but no part was unnaturally exuberant. When supported, he could raise his body from its bent shape to an upright position. The form of the back, when reclined, was quite natural. This circumstance, contrasted with subsequent experience, induces me strongly to believe that there was no disease whatever in the vertebral column; and this arching of the body was purely the effect of deficient muscular action, rendering the muscles of the back incapable of supporting the weight of the head and trunk; and, from the result of the examination which I was enabled to make a short time after, in a case which I shall presently relate, I am firmly of opinion that the deficient nervous energy in this case depended either on some morbid affection of the brain or its membranes, which rendered it incapable of transmitting its influence to the extreme parts of the body, or some diseased affection of the medulla spinalis, wholly independent on any disease in the vertebræ."

The third patient was a soldier, whose constitution had suffered from previous residence in hot climates. "In addition to the curved back, he had deficient muscular power in the lower limbs. There was a numbness and irregular action in the muscles of the fore-arms and hands: he was incapable of feeling any minute objects, and would often let things fall from his hands. On dissection, the liver, spleen, and lungs, were found to be diseased. "As I was most anxious to ascertain the state of the vertebræ and medulla spinalis, I did not pay much attention to these appearances, and, having cleared away the viscera, proceeded to make an accurate inspection of the vertebral column; and, no disease being apparent externally, I removed all the bodies of the vertebræ, by sawing through the rings between the articular processes. By this plan, I obtained a complete and very satisfactory view of the spinal marrow; but still no cause for the symptoms presented itself, and I was left to conjecture respecting the nature of the malady. On examining the head, however, the source of the mischief became apparent. The cellular structure of the pia mater was loaded with fluid, and the tunica arachnoidea was of a milky colour and thickened, especially at the base of the brain, where it was firmly connected with the pia mater, forming together a

tough dense membrane. I am aware that to many this may appear an insufficient cause for the violence and extent of the symptoms; but, having paid considerable attention to the morbid anatomy of the brain, and well knowing the infinite variety of symptoms produced in different individuals by the same morbid alteration of structure, I am satisfied in my own mind that all the phenomena were referable to this diseased state of the membranes."

Whatever difference of opinion may arise in other respects every one will, I think, admit Mr. Earle's cases to be legitimate examples of paraplegia, though certainly not of the variety described by Mr. Pott.

The more we become acquainted with spinal pathology, the stronger is our conviction that paraplegia ought to constitute a generic term, and include under it numerous species. Of these, one, and that comparatively of rare occurrence, originates in a carious state of the bones. In others, it takes place in the progress of the complaint; but in the greater number it never appears, though the health be generally impaired and destroyed by the mischievous effects impressed upon the constitution. We find the most essential signs of the disorder clearly displayed in Mr Baynton's case. There is debility, numbness, a pricking sensation, and torpor of the lower extremities, with incapability of directing the motions. In some, the upper limbs were also affected, as well as the internal viscera, giving to the malady a greater range of morbid action.

These phenomena having by all physiologists been referred to the nervous system, I do not think it necessary to produce any arguments in support of an admitted doctrine. The only question for discussion, is the seat of paraplegia. Is it ever in the brain, or is it always in the spinal marrow? In order to arrive at a more satisfactory conclusion, we may premise that none of the cerebral nerves, with the exception of the eighth pair, and perhaps the great sympathetic, descend below the throat; and the spinal marrow is united to the brain by means of the medulla oblongata. The cerebral nerves are principally employed to convey impressions to the sensorium commune, and transmit the determinations of the will to the muscles of voluntary motion. By means of the spinal nerves, the offices of secretion and excretion are performed. They regulate the circulation of the blood, and impart energy to the extremities of the body. These nerves are chiefly independent of the brain; for, if the head be cut off, in certain warm-blooded animals, and respiration artificially carried on, the trunk will

live for many hours; but, destroy the spinal marrow, and the animal dies almost immediately. We are led from these experiments to conclude, that the nerves of the brain and spinal marrow discharge separate and distinct offices in the animal economy, though the brain certainly exercises its control, through the spinal cord, over the voluntary muscles. The involuntary motions are executed by the spinal cord alone, and are wholly independent of the brain.

The difference between the two orders of nerves is very apparent in the paralysis which they occasion. Hemiplegia is confined to one side; paraplegia equally affects both. In the former, the diseased muscles are more flabby, soft, and unresisting, than in the latter. The mental faculties are always disturbed in hemiplegia; in paraplegia they remain free. The latter complaint deranges some of the internal functions; but in the former they are little impaired. By paying attention to these several distinguishing characters, a clear diagnosis may generally be established between these different forms of palsy.*

If we examine Mr. Earle's first case according to the above rule, we shall find considerable derangement within the body, as well as in the lower extremities. I cannot therefore hesitate to consider it as a species of paraplegia, induced by compression of the spinal nerves. From the torpor of the bladder and rectum, together with the involuntary discharge of feces after taking purgative medicines, I am induced to place the seat of disease in the loins or sacrum. I have come to this conclusion because the nerves distributed to the rectum and bladder issue from these parts. Had the disorder occupied a higher station, some of the abdominal viscera would have participated in the complaint. I am of opinion that his fever after exposure to wet and fatigue, proceeded from an attack of inflammatory rheumatism in the loins or sacrum.

The joints, the tendinous sheaths, bursæ mucosæ, and in general all parts furnished with fibrous structure, are liable to its invasion. The tendons of muscles are often attacked, but the fleshy bellies seldom or never suffer from this complaint. We find, on dissection, a glairy fluid effused, with increased thickness and morbid enlargement of the surrounding structure.

Rheumatism seizes indiscriminately upon the vertebral joints. The back is frequently the seat, because it is supplied with strong ligaments to provide for the weight and motions of the

* The diagnostic signs will be more fully considered in a future essay.

body. It has likewise the usual articular provisions, and a tendinous expansion, the common posterior ligament of the vertebræ, enclosed within the theca spinalis. Rheumatic inflammation of these organs, by enlarging their bulk and dimensions, occasions compression upon the spinal cord, impedes its operations, and thus induces coldness, debility, numbness, loss of feeling and motion in the limbs, and the various sensations and inabilities complained of in the internal parts. In agricultural districts, rheumatism is of frequent occurrence among the labouring poor, from their being thinly clothed and so much exposed to the changes of the weather. When it invades the back, symptomatic paraplegia often supervenes in the arms or legs. Many patients of this description have been admitted into the Horncastle Dispensary, under my professional care. In some, the paraplegia was entirely removed with the primary complaint: in others, it continued to torment the sufferer during the rest of life.

It is for these several reasons, and from the suddenness of the attack, that I feel inclined to impute the origin of Mr. Earle's first case to lumbago, rather than any other cause. Had the inflammation invaded bone or cartilage, I think its effects would not have appeared so early as the following day: I therefore coincide in the opinion that the vertebræ and cartilages were wholly untouched. The disorder in process of time became chronic, and was then attended with muscular debility. Still I think it began in membranous parts, and extended from them to the muscles. That the articulating organs of the vertebræ were relaxed and preternaturally elongated when Mr. Earle was consulted, must, I think, be conceded, from the arch or "half-hooped form" of the back in an erect posture, and its becoming straight upon lying down. To me it appears altogether impossible to distort the bones of the vertebral column in the manner described, without stretching and hurting some of the articulating connections. So long as they remain firm and unyielding, the vertebræ continue fixed; but when they begin to lengthen, the vertebræ as certainly show a disposition to move out of the line: I therefore think it much more probable that the affection was situated in the ligaments than the muscles, especially since fibrous texture possesses little inherent contractibility. When once over-stretched, it recovers its lost tone slowly and with difficulty. In this respect it differs from muscles, which admit of considerable contraction and relaxation, without injury to their functions. The bent figure of the vertebral column, and consequent extension of the spinal

marrow, would account for the symptoms under which the patient laboured when Mr. Earle saw him; but the commencement of disease on the morning after long exposure to wet and fatigue, cannot be referred to a circumstance which had not then taken place. The subsequent appearance of the same complaint in other vertebræ, is agreeable to an established law of the animal economy. Rheumatic inflammation passes successively from joint to joint, sometimes leaving the former to invade the latter; more frequently it attacks the new organ wihout deserting the old one. It is no uncommon thing for sciatica to proceed to the knees, ankles, and superior extremities. After remaining in all of them for a certain period, it gradually disappears, or degenerates into a protracted rheumatism. It is in this way that we account for the membranes and ligaments of the back becoming so generally and obstinately disordered in Mr. Earle's and Mr. Baynton's different cases.

An objection may be raised against this explanation, because, in the second case, Mr. Earle found no disease of the spinal marrow, after viewing it by "sawing through the rings between the articular processes." It is clear from the statement, that it never occurred to his mind to examine the articulations with any particular attention; otherwise, he would have laid them open with greater care and in a different manner. His eyes and thoughts were exclusively directed to the vertebral bones, their intermediate cartilages, and the spinal cord; and, to get to the objects of research, he incautiously tore and mangled the articulating membranes with a coarse instrument. It could not be expected, after such treatment, that the parts would display any strong signs of diseased structure; and, therefore, his finding no sufficient cause for the symptoms in the spinal marrow, does not convince me that none were present in the contiguous ligaments. The advocates for pressure generally would have examined the bones, cartilages, and membranes which surround the spinal marrow or connect the parts together, under an idea that paraplegia derives its origin from disease situate sometimes in one tissue and sometimes in another.

I have thus endeavoured, in controverting the theory of Mr. Earle, to establish the phenomena on a basis ample enough to afford them support, and more conformable to the principles of the animal economy.

Dr. Baillie has also favoured us with his sentiments on paraplegia, in the Transactions of the Royal College of Physicians.* It is much to be regreted, however, that he did not

* Vol. vi. page 16.

superintend the dissection of a patient, whom he had occasionally visited during life, and whose case constitutes the basis of his paper: had he personally directed the investigation, I am convinced that the spinal marrow and its membranes would not, under such circumstances, have escaped the notice of a physician intimately acquainted with morbid anatomy and the general principles of his profession. "This last form of paralytic affection," (the paraplegia), he observes, "has, as far as I can judge from individual experience, increased considerably in this country within the last fifteen or twenty years, although it be very difficult to assign any satisfactory reason for it. Paraplegia in adults has been considered by most medical men as being produced by some disease, either in the bones or ligaments of the spine, or in the cravity of the spine, most commonly at the loins, independently of any disease in the brain. The reason of this general opinion has probably been, that the lower part of the body from the loins downwards is in this disease, affected with paralysis; and that, in children, a similar disease is often obviously dependant upon a morbid affection of the lumbar or some other portion of the spine. In adults, however, where there has been no accident affecting the spine by outward violence, paraplegia, I believe, depends most commonly, in a great measure, upon a disease affecting the brain itself. This opinion I have entertained for several years, and some other medical men have likewise held the same opinion. It is, however, by no means general; and the chief object which I have in view in writing this paper, is to render this opinion more commonly known, that it may either be established or be properly limited by the future observations of other practitioners."

The brain and its membranes, in the case recorded, exhibited strong marks of disease, though they were not, as I think, sufficiently distinguishing to account for the paraplegic symptoms. We are not informed how the mental faculties and organs of sense were exercised under the pressure of the disease, nor to what degree the feeling and motion of the arms were impaired, or in what manner the thoracic and abdominal viscera discharged their respective offices. These omissions are the more to be lamented, because, if the several functions remained undisturbed, we have little reason for imputing the disorder of the lower limbs to the cause assigned.

"A considerable quantity of water," we are told, "was discharged during the inspection from within the theca of the spinal marrow." When such an obvious source of the disease

presented itself, we have surely more reason to refer the paraplegia to it, than attempt to search for its origin in the deranged structure of a distant part. We have the authority* of celebrated names for maintaining that, when a fluid is found after death both in the head and spinal tube, it sometimes commences in one part and sometimes in the other. Since, then, the effused liquor may, in the case recited, have had a two-fold commencement, it is impossible to determine, imperfectly as the inspection was conducted, where it was really formed. Had the surgeons examined the vertebral column with proper care, I think they would have discovered in it the origin of the disease and that the malady in the skull either proceeded from the spine, or was only a co-existant and unconnected attendant. We feel more grieved that the state and condition of this organ and its contents should have been overlooked, because the subject has been very little elucidated by careful dissection, and appears to be much in want of further investigation.

We have thus given a brief analysis of the works of Mr. Pott and Mr. Baynton, the two chief practical authorities on this subject, interspersing our remarks with the observations of other writers. This was undertaken with a view to communicate what has hitherto been advised and done in respect to one of the most obstinate and distressing calamities to which the human frame is exposed,—a calamity which poisons our present happiness, and deprives us of the hope of future enjoyment.

Case of Symptomatic or Hectic Fever, consequent to the Evacuation of extensive Collections of Matter, in which Stimulating Injections proved highly serviceable. By EDWARD THOMPSON, Member of the Royal College, London.

(From the London Medical Repository for March 1821.)

CASES of symptomatic, or hectic fever, consequent to the evacuation of extensive collections of matter, have been so frequently detailed; that I am perhaps to blame in transmitting the following for insertion in the valuable pages of the Repository. And yet, although we may have arrived at comparative excellence in the treatment of many diseases, it must be acknowledged that, in this, we are far from excellence,

*Morgag. Epist. xii. art. 9; Willis; Lieutaud, lib. iv. p. 341; Bonetus, Magnetus Coiterus.

and, indeed, in a state of primitive ignorance, as to the power we possess in checking its strides, or subduing its virulency. It would appear to advance or recede, alike regardless of our efforts to hasten or retard; and if it should sometimes spontaneously depart, we are not often left the transitory pleasure of thinking that our endeavours had produced the effect. If such be the intractable nature of the complaint, any change in the treatment may be of value, should it have been accompanied with a happy result; and I am induced to offer it, not with the most distant hope of its proving of much practical benefit, but with an anxious desire that gifted individuals may turn their attention more particularly to the study of diseases of this nature, as hence improvements may be expected to arise, and some control attained over affections which, when they do take place, commonly pursue their fatal course with a certainty not to be resisted. Before commencing the case, it is necessary to premise, that the method resorted to, on which the successful issue depended, did not originate in the surgeon, but in a self-taught veterinarian, who practised his art in the neighbourhood, and who put it into effect during the absence of the medical attendant.

William Sheffield, a mason, residing about a mile in the country, a short time after receiving a slight injury at his work, perceived a small tumour in the back, which increased daily. It gave him little or no uneasiness, and he was enabled to continue at his employment as usual, being not much incommoded by it, except on stooping, or endeavouring to raise any thing from the ground of much weight; he then experienced a dull pain, and a peculiar sensation in the right thigh. The swelling, being of so indolent a character, did not alarm him, expecting still, by stimulating applications, in time to dissipate it; but in this he was deceived, for, instead of decreasing, it grew larger; and, after trying such means for a long period without relief, he thought it advisable to seek other assistance, and I saw him on the 12th of January 1819, twelve months after its first appearance. The tumour, when examined, was found to extend from the third lumbar vertebra to the lower part of the sacrum, and from ilium to ilium. It was soft and elastic; the integuments were much distended, not pointed at any particular part, and of an equal thickness; the skin was of a natural colour, smooth, and shining; and he could bear it touched without feeling pain; indeed, handling the swelling in any way gave him not the least disturbance. It evidently contained a fluid, which appeared to have made

its way under the gluteus muscle on the right side; there was a fulness in this place; and the tumour in the back could be made tenser by pressure being applied at that part. He had, for six weeks before applying for surgical aid, been often attacked with shiverings, which continued an hour or so, and then left him; but from that time he daily grew weaker, and his appetite, which had been previously good, almost quitted him. His sleep became disturbed, and the system was rapidly giving way to the attacks of the disease; his look, which had been that of robust health, was now changed to a sickly hue; and there appeared no time for trifling, as the disease had existed too long already. The weight of the abcess had also become exceedingly troublesome, and his movements much impeded by it. He was anxious to have something done for his relief, and willing to undergo any thing to gain it. A lancet was at this visit plunged into the centre of the tumour, and an opening made just large enough to favour the escape of the matter: the plan fixed upon was the one recommended by Mr. Abernethy and Mr. Russel, viz. that of evacuating the pus as it collected in sufficient quantity, so as to effect, by this means, the contraction of the sac. Six pints of matter were discharged from the opening; the fluid from among the muscles in the buttock was pressed into the abcess, and from thence evacuated; a small piece of sticking plaster was applied; and a bandage, with compresses to the thigh, covered the whole. He was directed to keep in bed, and to avoid all unnecessary motion; a certain portion of wine was allowed him; and the bark mixture, with soda, was prescribed. He paid strict attention to whatever was desired of him, except that of keeping to his bed, on which much stress had been laid; but feeling so light and free from illness, after the abcess was tapped, he disregarded this necessary precaution; and to his attending rather to the feelings of the moment than to his future welfare, may be attributed, in a great measure, his subsequent sufferings. His appetite and strength, after the pus was let out, returned gradually; and he was a fortnight after in better health than he had been in for many months before. But these signs of amendment were soon to give place to others of a less cheering nature. He had, by the exercise he could not be prevailed upon to forego, prevented the matter from collecting in the tumour, and the opening from uniting; the dressings by this means were almost continually kept wet; and what was feared in a short time took place. The lips of the puncture began to put on an ulcerated appear-

ance; a low inflammation spread from this to the parts adjacent, apparently affecting the integuments through their whole thickness; the skin underwent the same change, assuming a deep red colour, which extended round the ulceration in the centre, like an areola, to the very limits of the sac. As this action arose, the matter became offensive, thin, and acrid; the constitution sympathized with such local derangement; and consuming hectic, with all its train of ills, began to sap the powers of life.—There are few surgeons who are not ready to admit the futility of medicine at this crisis: their patient they see sink away, notwithstanding the most powerful drugs are exhibited; application is resorted to after application, without producing the wished for effect; till at last they find, like the sagacious Ratcliff, that instead of twenty, not one remedy remains on which dependence can be placed.—At this juncture, after bark, opiate, cordials, &c., with applications of various kinds, such as preparations of lead, fomentations, &c. had been all severally used, without any benefit being derived, and the poor man was fast declining, from the prolonged but ineffectual efforts of the constitution to cast off local irritation, the proceeding above alluded to was ventured upon, with what intention I cannot presume to answer; and it is doubtful whether the person himself knew why he employed it, or what effect it might produce. Never having an opportunity of seeing him after, I gained nothing respecting it, except that the fluid was allowed to remain in the abcess some time.

On visiting the patient the next day, he was found in a high state of fever, complaining of great headach, violent pain in his back, and unable to suffer the slightest motion, or able to bear even the weight of the bedclothes. His pulse was rapid and full; skin hot; tongue white and furred; thirst excessive; had been in the night delirious; he was now collected, but unwilling to talk much; and to all appearance was in a state of extreme danger. These symptoms could not be accounted for; as, from the state in which he was left on my seeing him a day or two before, it was impossible almost for a moment to think that such excitement could have been induced, or if so, supported,—the debility being so extreme. It was not till on particular inquiry, his wife acknowledged that the injection had been used. When the back was examined, it was found in a high state of inflammation; the skin was of a bright red colour, which extended down the thigh. The least touch gave him excruciating pain, and he was obliged to keep con-

stantly on his face. The tumour seemed filled with fluid; but when pressed upon, nothing, except a small portion of dark-coloured liquid escaped. His linen was stained with the injection; and small undissolved grains of sulphate of copper lay on the skin, showing the solution to have been none of the weakest. The pyrexia continued without mitigation forty-eight hours; after that it slowly left him, and in three or four days disappeared, leaving him in a complete state of exhaustion. The inflammation in the back gradually subsided; he could move his limbs with more freedom; the matter put on a more healthy look than it had done since the first attack of hectic; and adhesion, from the firm feel of the integuments, appeared to have taken place. These symptoms were accompanied by an increase of appetite and of sleep; he every day gained more strength; the fever, which had been so critically put a stop to never again threatened; and the system soon cast off all disease. He was prevented using exercise as soon as he desired, from the fear of its producing unpleasant effects, the cavity not having throughout adhered to the parts below. The discharge which took place from the surface, not yet obliterated, was very trifling and of a healthy colour. A probe could be carried a little way under the integuments round the puncture, but not under the muscles of the hip; the outlet that way, large as it was, being entirely closed. In a short time, that portion of the sac which had not adhered contracted, the puncture united, and no further inconvenience was experienced. Slight absorption of the sacrum was the only consequence that ensued from the long pressure of matter which lay on the bone near twelve months. He is now as vigorous as ever, and has worked at his business above a year; enjoying excellent health, experiencing no bad effects either from weakness or stiffness of the parts, which might have been expected from the extent of the disease.

On viewing this case, the most striking circumstance that presents itself is the appearance of strength which the constitution displayed on the stimulating fluid being injected. This, when the frame seemed labouring under the most extreme weakness, is a matter of some astonishment; for it must be recollected, that the unavailing efforts of the system to subdue the local irritation had reduced the patient to the lowest apparent state of debility. If an opinion might be drawn from the phenomena exhibited in a single case, one would be prompted to say that debility has nothing to do with the original existing cause of local disease, attended by hectic fever. If what

Mr. Hunter has advanced be admitted, that hectic is owing to the parts being stimulated to produce an effect beyond their strength, how are we to account for the action of the fluid thrown into the sac? Weakness in the parts could not have been the cause, or a more excessive inflammation would not have arisen; excited by a stimulus much greater than the one already present: yet it did arise; and not only was a stop put to this weak action, but a new one induced, so much more powerful that adhesion was the consequence. Debility of the parts, if accepted, implies that more strength cannot be elicited: taking this for granted, then, a cure cannot take place without the stimulus be removed, which the weakened part is vainly opposing; and yet we see a greater excitement combated with vigour. It surely appears illogical, therefore, to say that debility can exist in a part where a power (or stimulus) double the force of the first may be immediately overcome. It would appear, then, that hectic may be produced by a peculiar action in a part, to change which, the system, is inadequate to the task,—not from debility, as this would imply a want of power to put in a stronger action, but from the want of a more active and different stimulus to enable it to take upon it new habitudes. Supposing, for a moment, the above reasoning to be correct, the inference would be, that a cure could only arise in those cases, where the action was so far increased as to do away with the diseased surface, by inducing adhesion. Our means of reducing the excited action of an inflamed cavity, whence matter has been taken, are so ineffectual, that our patients (if the *vis medicatrix naturæ* do not assist) generally sink under the disease. We cannot lower the activity of the vessels with the rapidity required to save life; and, therefore, till we arrive at this knowledge, we must seek for other methods of cure: and one of them, perhaps, although a dangerous one, may occasionally be found worth the trial: I mean that of injection. The manner in which the cavity began to assume diseased action is so strikingly illustrative of the opinion of Mr. Charles Bell, that it cannot fail to draw some attention towards the point in dispute, relative to the way such abcesses become inflamed. The irritative action spread from the lips of the orifice, and produced the fever as it advanced. If air had been the exciting cause, the whole surface would have at once put on disease; but this was not the case. Again, if air be, as Richter says, so prejudicial to the inside of abcesses, how was it that the cavity did not become sooner inflamed? It continued above a fortnight open to the atmos-

phere, and yet all went on well till the ulcerative process commenced.

Before concluding, I have to apologize for any prolixity I may have been guilty of, and perhaps for detailing a practice which may be trite and useless. To the first I plead guilty, but to the second I plead ignorance. I am not acquainted with any similar case in which injection was had recourse to, in an abcess so much inflamed previous to its being cured. There is a case related by the ingenious and excellent surgeon, Mr. Hutchinson, where an injection was thrown into the sac of a lumbar abcess with the happiest effect; but I do not recollect that it was employed under a state of great irritation.

Case of Pertussis. By T. W. Wansbrough, Surgeon, &c., Fulham.

(From the London Medical Repository for March, 1821.)

A fine healthy child, twelve months old, was attacked with violent symptoms of pertussis. The paroxysms were so severe as to threaten suffocation. The disease had existed nearly six weeks when I was called upon to attend. Inflammation of the lungs had supervened. The child refused the breast, and was exceedingly restless and uneasy from dyspnœa. I ordered the warm bath, and three leeches to the scrobiculus cordis, purged her briskly, and ultimately continued with antimonials and expectorants. In the course of twenty-four hours from my first visit, a considerable amendment was observed, the urgency of the symptoms being very much abated. A blister to the chest closed the active measures; and three days after, the inflammatory diathesis completely subsided. The paroxysms of the cough, nevertheless, were still violent, though the frequencey of them declined with the concomitant symptoms. In short, the little patient appeared likely to conquer this formidable foe; when, unfortunately, she was accidentally exposed to a current of air, which gave her cold, and increased the cough violently during that night. I again saw her on the following morning; and, unwilling to have recourse to the former measures for her relief, I determined on applying the vapour of tar, the absence of inflammatory symptoms warranting the application. Her breathing was short and op-

pressed, but the difficulty appeared to arise more from accumulation of mucus in the bronchiæ than irritation. My idea was to bring the remedy in contact with the part or parts affected, and thereby expedite the effect. If therefore, the remedy were likely to prove beneficial, the fact would be proved and illustrated by ocular demonstration. I decomposed a portion of petroleum Barbadense, by dipping into it a red hot iron; the end of the common poker answered the purpose conveniently. The child was held over the vapour as it arose, observing not to let her inhale it until sufficiently diluted by a due portion of *atmospheric* air. My little patient no sooner inhaled this gaseous compound, than she exhibited manifest signs of relief. Instead of avoiding the volume of vapour as it arose from the vessel, which I feared would be the case, she willingly inhaled it, and suffered the tar to be placed almost under her nostrils. The effect was conspicuous, in relieving the pressure under which the little sufferer laboured; expectoration was promoted, and rendered nearly free from effort, by this remedy. In short, after six exhibitions of the vapour, the cough almost ceased, and without the aid of any auxiliary the child perfectly recovered.

I feel satisfied that I am indebted to the efficacy of *carburetted hydrogen* and *oxygen* for the recovery of this case. The conspicuous, and, I may safely say, the surprising effects of this remedy, strongly stimulated me to communicate them as they occurred to me, through the medium of the Repository, to the notice of the Profession; when I happily experienced the heartfelt satisfaction of preserving, by the same means, from threatened destruction, *my own child*, an infant three months old. Accidental exposure to cold produced catarrh; the breathing was short and difficult, attended with sensible accumulation in the air-tubes of the lungs, which the child was unable to expectorate. These symptoms increased rapidly. There did not exist any other excitement than the difficulty of respiration. The distress of the infant excited feelings in my breast which can only be appreciated by a parent. I had already lost one child from pertussis, in which the vapour of tar was *never thought of;* another fell a victim to hydrocephalus from metastasis: and this last appeared hastening to form an addition to the number. From her birth she was delicate—smaller, considerably, than the generality of infants at her age. Leeches were inadmissible; not only because of the absence of active

inflammation, but also from the apprehension of depleting the already debilitated system. Emetics and expectorants were unavailing; the former, equally objectionable with leeches. Blisters were inadmissible, from the addition thereby of irritation to the system. Under these conflicting circumstances, my distress of mind may be easily conceived. I was led to the adoption of the warm bath; but the agitation it occasioned obliged me to relinquish all thoughts of a repetition. At length, worn with fatigue and suffering, at the end of three days, the poor little sufferer *refused the breast* in the morning; and I then concluded the termination of her distress by a fatal issue would, ere long, arrive. At this crisis, I had recourse to *tar vapour*, as mentioned in the former case. I applied it at a distance, whilst the child lay in the mother's arms. Breathing quick and short, with frequent interruption from what appeared to be accumulation in the bronchiæ. The little creature seemed revived the instant she inhaled the vapour, and made an effort to cough! Delighted at the effect, I placed the vessel nearer to her nostrils, and continued the fume for about three minutes, when a cough intervened, followed by an immediate vomiting of viscid phlegm and mucus, that nearly suffocated her. The quantity evacuated from the lungs and stomach saturated two handkerchiefs. Complete exhaustion for about a minute succeeded this operation; and, to my inexpressible joy, the little patient took the breast heartily afterwards, and sunk into a profound sleep, which lasted two hours; she awoke refreshed, and considerably relieved. Encouraged by this unexpected and happy success, I continued the application of the vapour for a week, twice in the day; when, from the decided remission of symptoms, I ceased the further use of it. The first six applications were succeeded, each time, by a copious expectoration, which always ended in an abatement of the previous symptoms.

About a month ago, my little girl again took cold, when the difficulty of breathing returned, attended by wheezing and cough. Recourse was again had to the same remedy, which procured relief the first time it was applied, by producing sickness, and a copious expectoration of phlegm and mucus. The second application was not so successful; symptoms of an inflammatory type supervening, with fever. The child being now six months old, and considerably mended in constitution, I exhibited antimonials, and applied a blister to the chest. The febrile symptoms remitted, and an amendment

followed. The support which the mother had afforded now declined, both in quantity and quality; and we were necessitated to adopt another source of nourishment, but through the same medium, viz. the breast. Change of air, at the same time has, in conjunction with her nourishment, happily restored the infant to our anxious hopes. After the subsidence of the inflammatory action, the vapour was applied three or four times, and with confirmed success. The child is now perfectly well, and is gaining flesh.

Master Alfred Wallis, the little fellow whose case is recorded in the Repository, vol. xiv page 182, three months since, manifested symptoms of asthma. His father, hearing me often make mention of the success I had experienced in the application of the vapour, in pneumonic affections, requested I would try it with the boy. He was unwilling that any active measures should be resorted to, the child having so recently recovered of phthisis. The state of the little patient was as follows: his breathing oppressed; cough frequent and violent, *without any* expectoration; each paroxysm produced suffusion of the eyes, and florid countenance. The idiosyncracy of system (hydrocephalic) led me to apprehend encephalic congestion. His rest was much disturbed by the cough. Upon placing the hand between the shoulders, and on the chest, the wheezing was very sensibly felt; and the child seemed to breathe, so to speak, as through a sieve; such was the accumulation of mucus in the air-tubes of the lungs. Desirous of affording the vapour a fair experiment in this case, it being more closely allied to the class of pulmonary affections, in which it appeared most unequivocally applicable, I commenced the trial; and my patient inhaled the vapour, diluted as in the two former experiments, from the 14th of August to the 23d of September, regularly; then every other day, and finally ceased on the 28th of October. The first eight or ten inhalations produced powerful action of the lungs; and the quantity of mucus expectorated exceeded belief; and it gradually subsided, whilst the pulmonary viscera seemed to expand, under the influence of the new atmosphere. My little patient came *voluntarily*, during the whole period, as he used to say, "to get rid of the phlegm." It is remarkable that the child gained flesh whilst under treatment. Not a single medicament of any description was exhibited to him, as I was determined to witness the unassisted effects of the vapour. He is now quite well; and when he has any "wheezing," as he calls it, a dose of tar vapour sends it away.

By the by, he has had but *one* dose since he left off his regular attendance.

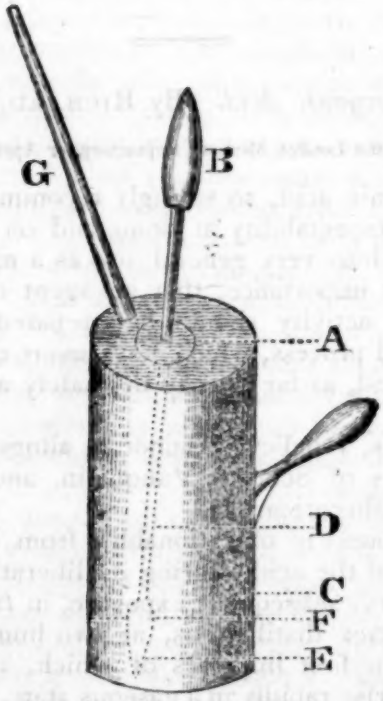
Upon the whole, then, it may, I presume, be inferred, from the cases here adduced, that the efficacy of carburetted hydrogen, produced in the manner I have detailed, possesses decided advantages in chronic and in recent cases of pulmonic affections, before the accession of active inflammatory symptoms. In the few cases that have come under my observation, wherein I have applied it, *immediate* relief and ultimate benefit have accrued to the patient. The only instance of failure I have experienced was in the second attack of my own child: there, I candidly confess, my former success rendered me blind to the existence of active symptoms, until I perceived them increased by the stimulating nature of the application. Yet, after the inflammatory action was removed, the effect of the vapour was certainly efficacious: so that, it appears in cases where the lungs are under the influence of an inflammatory diathesis, the exhibition of this remedy is improper; but in chronic pulmonary affections, and also subsequent to the existence of increased arterial action, I have no doubt of the superior efficacy of this gaseous compound. I will not presume to enter into any thing like a rationale of its qualities:—that I leave to abler pens than mine. I would only offer *facts*, with such comments merely as arise from a due consideration of the importance of the subject; feeling, as I do, that many children may be yet saved from premature death, by the adoption of this simple yet powerful remedy, even by the parents themselves. Should I be so fortunate as to stimulate, by my humble efforts, one individual to a successful application of the *vapour of Barbadoes tar*, my object will be obtained, and I shall rest satisfied with the result of this communication.

The mode of administering the vapour I adopted in the case of Master Wallis, and my own child, which I have since found exceedingly applicable to infants, is simply this. A vessel of tin, resembling a coffee-pot, contains the tar: the size is immaterial; twelve inches by four will suffice for the generality of cases: a conical tube issuing from the top; a corresponding opening on the opposite side, to allow a draft, that the vapour may ascend. The iron is what may be obtained at any ironmonger's: laundresses use it for what they term the *Italian iron*. This heater being attached to a firm iron rod, terminating in a wooden handle, is altogether eighteen inches in length. The cover or lid of the pot is made to slide

on this rod; so that when the heater is made hot, upon being immersed into the tar, the cover fits on, and prevents any escape of vapour. The tube of the pot is then kept to the nostril, at the proper distance, that the vapour may be inspired.

Care must be taken that the heater be not red hot, in which case, ignition of the gases, attended by an explosion, will happen, and may be of serious consequence. This happened once with me: I therefore caution those who use the remedy, to observe the degree of heat ere the heater be immersed in the tar: neglect of this observance on my part occasioned ignition, and burnt the eye-lashes and eye-brow of my little patient Wallis.

The following is a delineation of the Instrument just referred to.



A, The cover, which fits into the top when the heater is put into the tar.

B, The wooden handle of the heater.

B, The situation of the opening, above the size of half a crown, an inch and a half.

D, The iron rod of the heater.

E, The heater.

F, The height of the tar, beyond which it ought not to rise.

G, The tube, which is eighteen inches long, for the convenience of guiding the apparatus in conveying the vapour.

The inclination of the tube from the plane of the cover may be at pleasure.

I would observe, that the exhibition of the vapour never produced vomiting, whenever I have applied it, unless the bronchiæ were loaded with mucus; and in either case, viz. whether there existed mucus or not, the remedy invariably operated as an anodyne, producing sleep.

(We are much obliged to Mr. Wansbrough for the above communication. It appears to us, although we have had no experience on the subject, that the tar vapour might be useful in the last stages of croup, when the trachea and bronchiæ are plugged up with secretion.)

On Hydrocyanic Acid. By Richard Maguire.

(From the London Medical Repository for April 1821.)

As hydrocyanic acid, so strongly recommended by authorities of high respectability at home and on the continent, is likely to come into very general use as a medicine, it is an object of great importance, that an agent of such powerful and dangerous activity should be prepared by some determinate standard process, which may ensure certain uniformity in the result, and, as far as may be, safety and facility in the execution.

These objects, I believe, cannot be altogether commanded by the processes of Scheele, Vauquelin, and that said to be adopted at Apothecaries' Hall.

Scheele's process is objectionable, from the unavoidable, indefinite loss of the acid, during its liberation from the cyanuret of mercury, subseqnent exposure, in *twice* pouring into the retort for *two* distillations, at two hundred and twelve temperature; the first impulses of which, causing this very volatile acid to rise rapidly in a gaseous state, *without* adequate provision for its absorption and condensation, a considerable part must either escape through the luting, as Scheele himself remarked, or risk the bursting of the vessels, to the no small hazard of the operator.

The same objections, the first excepted, equally attach to the process followed at the hall.

Vauquelin's process is objectionable, from the difficulty of ascertaining the complete decomposition of the cyanuret, without filtering and testing a part of the mixture, rendered thick and black by the detached sulphuret of mercury; and unavoidable loss of prussic acid during that decomposition, and the subsequent exposure by filtration, &c. however carefully managed.

Reflecting on the most likely means of obviating these objections, it occurred to me, that the desired object of transferring in *one* operation, the whole of the prussic acid contained in a given quantity of cyanuret of mercury, decomposed by muriatic acid, to a given quantity of distilled water, may be best accomplished by (a modification of Gay Lussac's process for obtaining the pure concentrated acid,) transmitting its vapour through a tube containing *only* pure carbonate of lime, thence directly into the water kept at nearly thirty-two degrees temperature.

On trial, I found my expectations fully answered in every respect.

To such as are perfectly conversant with chemical operations, the following description of the process and appropriate apparatus may appear unnecessary; but as it may assist in facilitating the due preparation of the medicine by several too remote from its present limited sources of supply, to procure it with sufficient promptness and convenience for the increasing general demand, it will not perhaps be considered altogether superfluous.

The annexed sketch is a representation of the apparatus.

If the horizontal tube to be nearly filled with very small pieces of white marble, be a little bent in the centre, the small quantity of fluid condensed in it will be prevented from approaching either extremity. A hollow bulb blown in the the small tube entering the receiving bottle, will prevent any of the liquor in that bottle from being forced into the horizontal tube by pressure from diminished temperature. The foot of this small tube should reach nearly to the bottom of the receiver, and pass rather tightly through a cork, perforated in the centre, and well fitted to its mouth. This contrivance will afford a discretionary power of adding to the pressure of the high column of water formed by the long narrow shape of the receiver, and also of obviating occasional expansion from unnecessary increase of temperature, which, at no period of the process, should exceed one hundred and twenty degrees. The tubulated matrass, (a form, I think, preferable to that of

a retort, as its neck may be more easily bent and made cylindrical of the desired size,) and the right angled tube may be either ground into the ends of the horizontal tube, or steadily inserted by means of perforated corks, carefully luted, and further secured by strips of moistened bladder firmly tied round.

Thus adjusted, I put six fluid ounces of distilled water into the receiver, surrounded with ice; one ounce and a half of pure crystallized cyanuret of mercury, powdered into the matrass; over it, one ounce and a half of pure colourless muriatic acid, .150 sp. gr., and closed the tubulure with its glass stopper. The prussic acid began immediately to be disengaged and rise in vapour. For a few seconds the displaced atmospheric air of the vessels (which should not be of larger capacity than necessary) was suffered to escape from the receiver. It was then closed by the moveable cork, and so left for the night. The acid was found in the morning still passing over, as indicated by bubbles slowly arising from the surface of a small remaining portion of undissolved cyanuret. By the gradual application of a very moderate heat from an Argand lamp, the bubbles rose more rapidly, and so continued until the complete solution of the cyanuret, when they ceased entirely. The temperature was then gradually raised to one hundred and twenty degrees, and so steadily continued until the liquor in the matrass, becoming cloudy, from precipitating bichloride of mercury, indicated the entire expulsion of the prussic acid, which proved to be the case, as on loosening the stopper the least smell of it could not be perceived. To expel it from the horizontal tube, it was gradually brought to one hundred and twenty temperature, by a heated iron, cautiously held underneath at due distance, and slowly moved from the matrass end to the other; the lamp still remaining under the matrass. This accomplished, the receiver was removed, and immediately closed with its glass stopper.

During the whole process, which, from the time of placing the lamp under the matrass, did not occupy an hour and a half, no smell of prussic acid was perceptible at the junctures, at the mouth of the receiver, nor from the horizontal tube, separated immediately after from the matrass and small tube. The water had therefore absorbed and condensed all the acid contained in the cyanuret.

It is obvious, that in this way it may be made of any desired degree of concentration. But the necessity of appointing one invariable standard will be more evident, if the discre-

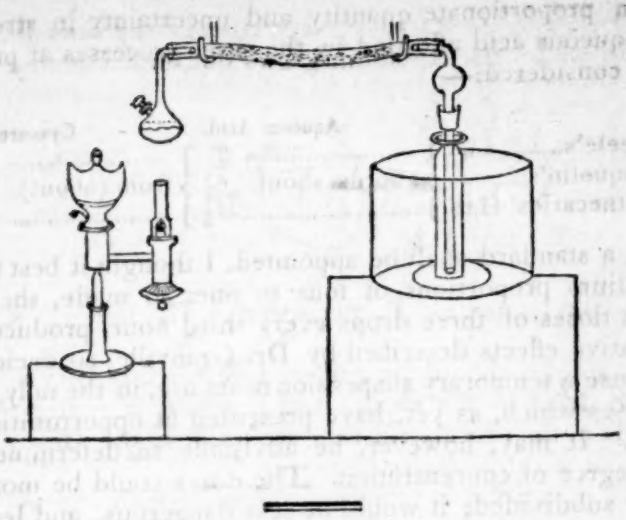
pance in proportionate quantity and uncertainty in strength, of the aqueous acid afforded by the three processes at present used be considered:—

		Aqueous Acid.		Cyanuret.
Scheele's	affords about	2	from (about)	1
Vauquelin's	affords about	$6\frac{1}{2}$	from (about)	1
Apothecaries' Hall	affords about	$5\frac{1}{3}$	from (about)	1

Until a standard shall be appointed, I thought it best to use the medium proportions of four to one: so made, the acid, given in doses of three drops every third hour, produced all the sedative effects described by Dr. Granville. so decidedly, as to cause a temporary suspension of its use, in the only three adult cases which, as yet, have presented fit opportunities for its trial. It may, however, be advisable to determine on a lesser degree of concentration. The doses could be more accurately subdivided; it would be less dangerous, and less liable to loss of gaseous acid by exposure.

As the purity and strength of the product may essentially depend on the quality of the cyanuret, which is liable to be reduced to the state of a sub-cyanuret, by too high a degree of temperature incautiously or accidentally applied in the preparation, none should be used for this purpose that is not in white crystals, which will not be thus afforded in the first instance; and from this cause may possibly arise the yellow colour of the acid prepared at the Hall. Much of the trouble and loss of time attending the necessary purification of this salt, by repeated solution and crystallization, as directed in the Paris Codex Medicamentorius, may be saved, and pure crystals obtained, by proceeding in the following manner: evaporate the filtered liquors to a pellicle, by the heat of a vapour bath; after which continue the evaporation at a reduced temperature, with constant stirring, until a proportionably small quantity of deep yellow mother water remain, which is to be drained off. The purer salt requiring more than eight waters, at fifty-five degrees, for solution, is to be freed from the remaining more soluble colouring matter by washing with successive small portions of distilled cold water. One solution and careful crystallization will then afford it pure. The washings may be put by for a future preparation.

For a sketch of the apparatus see the following page.



On Colchicum Seeds. By John Edward Gray.

(From the London Medical Repository for April 1821.)

Dr. William Williams, of Ipswich, has introduced to our notice, with very great praise, the use of colchicum seeds in chronic rheumatism; and they indeed appear more certain in their effects, in the two cases that I have tried them, than the root. But as there has been a greater call for them than the herb shops had expected, or than they could readily procure, several other seeds have been sold for them, and by that means a fair trial of them has not been given. Therefore I have sent a description of the seeds, as Dr. Williams has only figured the capsule, and that when it was not ripe.

Semina Colchici Autumnalis.

Seeds, ovate, globose, about one-eighth of an inch in diameter.

Integuments, simple, soft, spongy, membranaceous, thin, reddish brown, closely adherent to the perisperm.

Parisperm, or *Albumen*, hard, rather cartilaginous, pellucid, pale, not in the least divided, of the same shape as the seed.

Corculum, or *Embryo*, very small, ovate, globose, not in the least divided, whitish, placed nearly opposite to the *hylum*, or that part where the seed is affixed to the parent plant, but out of the axis of the seed. Base pointing to the hylum, slender. Apex very obtuse.

The following is a transverse section of the seed from the hylum to where the corculum grows out, much enlarged:—

I. the integuments. P. perisperm. H. hylum. C. corculum.

The capsules should be gathered just before they are ripe, and then dried in the shade; and it would be better to keep the seeds in the capsule till they are used, in the same manner as is usual with *cardamomi minores*.

I have seen a flat seed sold for them, which appears to belong to a plant of the family of *liliacea*. The seeds are very like several of the plants belonging to the family *asphodelæ*, as the *hyacinthus nutans*, the common hare bell, &c. but the integuments of all these are crustaceous, brittle, shining, black; and in the family *smilaceæ* it is thin, membranaceous, and they are enclosed in a berry.

An Analysis of the Root of the Rheum Palmatum, or Rhubarb.

By W. T. Brande, S. R. S., &c.

(From the London Medical Repository for February, 1821.)

1. There appears to have been no chemical investigation into the nature of rhubarb, if we except a few experiments upon it given in Neumann's Chemistry, where it is stated that a great portion of it is soluble in water, and that alcohol scarcely acts upon the residue. Neumann got from four hundred and eighty grains one hundred and eighty of alcoholic, and afterwards one hundred and seventy of watery extract; and inversely, three hundred and fifty watery, and only five of alcoholic extract.

2. In the following experiments the finest Russian rhubarb was used, free from decay, and distinctly streaked with white and red veins upon its cut surface: the former are chiefly gum, the latter contain the extractive and astringent principle, as may be shown by washing the surface with a dilute solution of iron, when the red streaks only are discoloured.

3. One hundred grains of rhubarb, digested in eight ounces of boiling water, till cold, gave a yellow-brown infusion, which was tested by the following re-agents, and gave the annexed results:—

Acetate of lead	a copious yellow precipitate.
Subacetate of lead	a red precipitate.
Proto-muriate of tin	a copious yellow precipitate.
Proto-sulphate of iron	an olive-green precipitate.
Nitric acid	a brown precipitate.
Oxalic acid	no effect.
Infusion of galls	no effect.
Solution of gelatine	a copious brown precipitate.

4. It may be remarked, in respect to the above precipitates, that nearly the whole of the colouring matter was carried down by the acetate of lead, so as to leave the supernatant liquor almost colourless. The precipitate by nitric acid was most copious when a few drops of acid were added to the concentrated infusion; it had the character of resinous matter, and was probably altered extractive. It was again dissolved by nitric acid added in excess. The precipitate by gelatine was most copious in the cold infusion; it scarcely formed in the hot infusion, and was re-dissolved by adding excess of the solution of isinglass.

5. One hundred grains of the bruised root were digested repeatedly in fresh portions of alcohol, (specific gravity 8.15,) till it exerted no further action, and came off perfectly colourless. The residue weighed, when dried at 212°, 55.8 grains; it was insipid, and when put into water it softened and gave by long digestion a viscid solution. When subsequently dried, it was found to have lost thirty-one grains, which, obtained by evaporation, had all the characters of gum; it was insoluble in alcohol, and did not affect solution of iodine.

6. The alcoholic solution was of a deep yellow colour, and had a peculiarly nauseous taste; it was concentrated by distillation, and carefully evaporated to dryness: it left a brown residue weighing thirty-six grains, which being triturated with cold distilled water, and poured upon a filter, and resolved into ten grains of insoluble resin and twenty-six grains of soluble matter.

7. The resin, amounting to ten grains, was of a brown colour, gave out an aromatic odour when burnt, and entirely dissolved in sulphuric ether.

8. The twenty-six grains of matter, soluble in water, were obtained by evaporation, and afforded, upon being re-dissolved, a clear brown aqueous solution, which rendered solution

of isinglass turbid, blackened solution of iron, and formed a copious precipitate with acetate of lead: this residue, therefore, was chiefly extract of tan.

9. From the above experiments it appears, that one hundred parts of rhubarb contain

Gum	31	55.8 grains (5)	
Wood and insoluble residue	24.8		
Resin	10.	36.	(6)
Extractive and tan	26.		
	91.8		
Loss	8.2		
	100.		

10. The loss in the above experiments may be ascribed to water; for upon drying rhubarb by long exposure to heat a little above 212°, the average loss of several samples was *ten per cent.*

11. One hundred grains of rhubarb were put into a small retort, and distilled by a heat gradually raised to redness. Water at first passed off, succeeded by a yellow vapour, which condensed in the neck of the retort into a thick oil, and an acid liquor passed into the receiver, which blackened permuriate of iron. Forty-one grains of charcoal remained in the retort, which were reduced to powder, digested in dilute muriatic acid, washed and dried at a red heat in a close vessel. They lost in this process 6.5 grains.

12. The muriatic solution, on being saturated with pure ammonia, let fall two grains of a substance having the characters of phosphate of lime. This was separated by filtration, and carbonate of ammonia added to the filtered liquor gave a further precipitate, which, collected and dried, was found to be 4.2 grains of carbonate of lime.

13. The results, then, of the destructive distillation of rhubarb may be stated as follows:—

Water		10
Empyreumatic oil, gallic acid and water formed		49.
Charcoal		34.5
Phosphate of lime		2.
Carbonate of lime		4.2
Loss		3
		100.9

14. To ascertain in what state the 4.2 grains of carbonate of lime had existed in the root, before its destruction by fire, one hundred grains of rhubarb were deprived of all soluble matter by the action of alcohol and water; these solutions were evaporated, and the residue submitted to a red heat in an open platinum crucible burnt away, leaving no appreciable portion of earthy alkaline or saline matter, a small trace of common salt and of lime excepted. The insoluble woody fibre was digested in muriatic acid, and the solution saturated by ammonia; it gave a precipitate weighing 8.5 grains, from which, by the action of sulphuric acid, a portion of malic acid was separated. If this precipitate, therefore, be regarded as composed of phosphate and malate of lime, it would consist of

	grains.	
Phosphate of lime	2.	(12)
Malate of lime	6.5	
	8.5	

15. The component parts of rhubarb, therefore, would appear, from the whole of the preceeding data, to be as follow:—

Water	8.2	(10)
Gum	31.0	(5)
Resin	10 0	(7)
Extract tan and gallic acid	26.0	(8)
Phosphate of lime . .	2.	(12)
Malate of lime	6.5	(14)
Woody fibre	16.3	(5)
	100.0	

16. The very copious precipitate obtained by adding solution of acetate of lead to infusion of rhubarb, induced me to hope that some peculiar principle might be found in it, combined with the metallic oxide; I therefore collected a quantity of the compound, diffused it in water, and passed sulphuretted hydrogen through the mixture, which was afterwards boiled, filtered, and evaporated to dryness: a brown viscid substance, of a peculiar smell, and somewhat acid flavour, remained, which I was at first inclined to regard as some distinct principle; but a few experiments soon taught me

that it was merely a mixture of extractive matter with a little sulphuric acid.

17. The activity of rhubarb, as a medicine, appears to reside entirely in those principles which are soluble in alcohol; the alcoholic extract was found in a drastic purge, and and the resin, in its pure form, also proved aperient; while the gum obtained from the residue, insoluble in alcohol (5), was perfectly inert, and did not possess any peculiar medicinal qualities.

SELECTED REVIEWS.

Principes généraux de Physiologie-Fathologique coordonnés d'après la Doctrine de Broussais. Par L. J. Begin, Chirurgeon Aide-Major a l'Hôpital Militaire d'Instruction de Metz. 8vo. pp. 390. Mequignon-Marvis, à Paris, 1821.

(From the London Medical and Physical Journal for March 1821.)

About a year since, we noticed a book professing to be the substance of the lectures of Dr. Broussais, and of which we promised to present a particular account to the readers of this Journal; but, on further consideration, we determined not to do the professor at the Val-de-Grace so much injustice as to promulgate such vague, imperfect, and desultory statements, under the title assumed for them. Dr. Broussais has himself published only a Treatise on Chronic Inflammation, a work entitled an "Examination of the Medical Doctrine generally adopted," and some Memoirs in the *Journal Universel des Sciences Médicales*, and other Journals; of the whole of which an abstract has been given in the exposition of his doctrine inserted in some late numbers of this Journal, and the Historical Sketches of the Progress of Medicine: so that, on perusing the work of Mr. Bégin, and finding him say, in the introduction, if there is any thing good in it, it must be attributed to Dr. Broussais, we are obliged to infer that the professor has developed many views in his lectures that are not to be found in his printed publications. Yet, even admitting this supposition, we cannot but admire the modesty of Mr. Begin, in claiming for himself so little merit as he has done on this occasion. The work is composed in so methodic and perspicuous a manner, and presents such a well-arranged exposition of the principles in physiology that are of most essential importance in regard to pathology, that, as a mere compilation, it might obtain no small degree of credit to a writer who had even acquired so much estimation as had already been attained by Mr. Bégin. This work is not, indeed, a mere exposition of the doctrines of Broussais; for the author has advanced ob-

jectionable criticism to his opinions, and has in some instances deviated from his principles in the theories he endeavours to establish; and he has himself shown, in a very favourable point of view, the benefits that will arise to pathology from the further application of the knowledge of the human economy in the state of health than had hitherto been effected.

Amongst the reflections contained in the introduction, (which is full of judicious considerations,) the author adduces some good remarks on the utility, and indeed absolute necessity of theory, which he concludes with saying, that, "notwithstanding their continual declamations against theories; the empirics always suffer themselves to be guided by the ideas they form of the nature of the disease; and they constantly appropriate, in spite of themselves, their remedial measures to that supposed nature." An English author (whose writings we have often quoted of late, when some of the most interesting and difficult questions relating to medicine have come before us,) had previously remarked, in his "View of the Relations of the Nervous System," that general conclusions are made "by none more frequently than by those who profess to hold theory in contempt, but who, in fact, practise more upon theory than any others, and in general upon that of the very worst kind,—namely, that founded upon the loosest analogies; upon that made with no care, with no trouble; upon that which they would be offended to hear called theory: unaware of the process of their own minds, they fancy that inferences are visible things; they are perpetually meeting with solitary facts, and as often generalizing them, until they meet with opposite facts; and it is highly probable that they will generalize them too; or else they are at their *ne plus ultra*, and conclude it is all a dark business."

The first chapter in the work before us relates to "the Vital Properties." The author here exposes the error of conduct of those who have regarded the results of the properties of organization as elementary existences independent of such organization, and who have talked of changes of the vital properties as if it were possible that alteration could take place in them without any change of the structure on which their existence depends. But his own notions on this subject are not free from much obscurity, and even positive contradictions. He says, "*For the physiologist who embraces at one view the whole series of organized beings, there exists no other vital properties than those which are inherent with all bodies endowed with life, at all the epochs of their existence, and which are*

absolutely indispensable for their preservation. In proportion as the organization becomes complicated, its acts become more numerous; but it is not because those properties are multiplied, —it is because the organs are more varied and execute more difficult functions." If the vital properties are regarded as the causes of organization, there must be a diversity in them consonant with the diversities of the organization produced, or effects must take place without causes. If they are considered as the effects of organization, we only shift the difficulty, as will be presently shown. It might be supposed that Mr. Bégin may regard the vital properties as the properties of a principle that is attached to organized bodies, on which they act as with machines variously constructed; but that such are not his notions will appear by his definition of irritability. He says, "*Thus defined, the vital properties are reduced to one single power, or rather to one single fact, which I call* IRRITABILITY, *after Glisson and Gorter.*" (Here he converts his obscure inferences into a FACT.) Irritability he defines, "AN APTITUDE POSSESSED BY CERTAIN BODIES TO RECEIVE THE IMPRESSION OF OTHER BODIES WHICH ARE FOREIGN TO THEM, AND TO MOVE THEMSELVES IN CONSEQUENCE OF THIS IMPRESSION."—"*Irritability,*" he then immediately adds, *is a quality, a condition, an inherent property, of all matter endowed with life: it depends on the organization of that matter; it arises, is developed, and disappears, with the organic texture: but its nature is as inconceivable as gravity, extent, and all the other physical properties of bodies.*"

According to this reasoning, it appears, then, that all the vital properties are reduced to irritability; are but irritability; that irritability is dependent on organization, and that it is identical, though the organization is various, and executes various functions. The only means, then, of accounting for this diversity of functions are, either diversities of the *mechanism* of the part, (the validity of which proposition Mr. Bégin does not admit,) or the existence of *some other properties.* These other properties are considered by Mr. Bégin as the results of the laws of the *living chemistry (chimie vivante)* of Broussais: and thus he satisfies himself with mere *words*, instead of ideas or precise inferences. As—and the proposition is admitted—the laws of this *living chemistry* are different from those of the chemistry of inorganic bodies, that in which the difference consists, and which is peculiar to life, must be either a peculiar entity which is a cause of life, and, being a cause, must therefore enter into life as one of its con-

stituents, and consequently must become a property of life;—or it must be the effect of life, and, being an *effect proper to life*, it must have its proper or peculiar causes; which peculiar causes (in spite of an abuse of terms) must be properties of life, or *vital properties*. Thus, by this mode of reasoning, a diversity of vital properties is demonstrated.

It is true that Mr. Bégin assumes a distinction between *functions* and the mere development of vitality; and he simplifies the idea of life so far as to make it consist in "an aptitude possessed by certain bodies to receive the impressions of other bodies which are foreign to them, and to move themselves in consequence of this impression." But he cannot, by this assumption, get out of the dilemma in which we have shown him to be placed. This simplification of life is an untenable assumption: it is a gross absurdity. How can an *aptitude to move on the receipt of certain impressions*, combined with any mechanism, account for any one *proper vital act?* Besides this, his distinction of *functions* and the *simple act of vitality*, supposes effects to exist of which there are not the causes. For, as the diversities of function are not explicable either by diversities of *mechanism*, or by diversities of *vital properties*, and (as it has been above shown) his *living chemistry* being referable to *vital properties*, there remains nothing that can be the causes of those diversities of functions: therefore, according to his own reasonings, *they must originate from nothing*.

That Mr. Bégin should have got into such a dilemma, by attempting to reduce the vital properties to *one single principle*, does not much surprise us. These, however, are but uninteresting topics to most readers; and we should not have dwelt so long upon this part of the work, had it not been the production of such a physiologist as one of the writers of the article "Irritabilité," in the *Dictionnaire des Sciences Médicales*.

The second chapter of the work before us is on "the Varieties of the Animal Organization;" a title somewhat too comprehensive, as the disquisition relates only to what have ordinarily been termed diversities of *temperament* and *idiosyncracies*. Mr. Bégin employs the latter term in a new sense, and he makes a distinction between temperaments and idiosyncracies, that he has, perhaps, derived from Bordeu. He proposes, besides making the temperaments of individuals,—which should be characterized by the relative prevalence of the *sanguineous*, *nervous*, or *lymphatic* systems throughout

the body generally; that we should designate the organs or functions which predominate in the economy, and regard such a predominance as designative of the idiosyncracies. Thus, a person may be said to have a sanguineous temperament and pulmonary idiosyncracy; or a nervous temperament and an hepatic idiosyncracy; or a lymphatic temperament and a mucous (from a predominance of activity or irritability of the mucous membranes) idiosyncracy; or one of the above-mentioned temperaments with fibro-articular idiosycracy, (in which the ligaments of the joints are especially disposed to disease; and which idiosyncracy constitutes, according to Mr. Bégin, what has been called the *gouty diathesis:)* and so with the other combinations of the *three* (above-enumerated) general, and the more numerous particular, varieties of the organization in individuals. There seems to be nothing objectionable in this proposition, whilst it is qualified to favour conciseness in the narration of particular histories of disease.

The importance of the influence of peculiarities of temperament on particular cases of disease, has not, perhaps, been sufficiently considered of late, by the generality of English practitioners. Darwin probably carried this doctrine too far, as well as his sympathetic theory; and hence, very likely, the improper discredit into which they have both fallen: for the abuse of principles, however good, by excess in their application, very commonly leads to an unmerited degree of neglect of them. The fate of Darwin and his medical writings has, however, been somewhat extraordinary. He obtained an overwhelming reputation during his life,* and he is already almost forgotten; and his works have contributed much to the unjust odium of medical theory that is now prevalent, whilst they present many of the most admirable examples of its utility.

Mr. Bégin says, "the doctrine of the temperaments is one of the most important parts of medical theory. It is the foundation of the most valuable indications for medical practice. Men differ so much according to the diversities of their constitutions, that the otherwise best narrated histories of disease would be incomplete, and barren to our contemporaries

* And this not merely with the public, but with the profession also; many proofs of which might be adduced. As one instance, we may mention that the physician who, next to Darwin, had obtained the greatest celebrity in the West of England, carried his daughter to Derby to place her under Darwin's care, with a confident expectation that he could cure her, though she was in the last stage of tubercular consumption.

and to posterity, if we neglected to designate the peculiar organization of the subjects of them, before we described the causes, the symptoms, and the termination, of the maladies to which they relate."

Amongst the temperaments and idiosyncracies, some are born with us,—at least, the predispositions to them are transmitted by generation; others are produced either by the revolutions which ordinarily take place at different epochs of life, or result from certain modes of living, climate, &c. To overthrow an unfavourable temperament, and correct a vicious idiosyncrasy, and replace them by more advantageous conditions, are the objects of physical education and medical gymnastics, rather than of the ordinary practice of medicine: and are, therefore, not considered by Mr. Bégin in this work. He directs his attention to the exposition of the consequences of the particular conditions above alluded to, when they actually exist, and endeavours to draw some practical indications from his views. The sanguineous temperament, he says, always accompanies the muscular idiosyncrasy, and it is commonly accompanied with gastric and genital idiosyncracies. Inflammation, in the subjects of it, but rarely passes into the chronic state, or affects secondarily the *white vessels*.* The heart is particularly liable to be affected by sympathy, and it is one of the conditions in which the most precise indications may be drawn from the state of the pulse; the most important of which are in review by Mr. Bégin. He dwells especially on the important fact, that a very high degree of excitement of the capillary vessels and pain, instead of increasing the action of the heart, "chain" the motion of that organ, which then becomes tumultuously agitated, and dilates with difficulty: in which state, blood-letting, abstinence from food, and cold drink, serve to develop its movements; a result which is frequently found to take place in a very sudden manner, after the reduction of a strangulated hernia. On discussing the question, "What is the cause of the fullness and largeness of the pulse observed in certain cases of irritation; whilst others render it small, hard, contracted, and almost convulsive?" he says, "when the inflamed parts are soft, spongy, easily dilatable and not abundantly supplied with nerves, the pulse is full, developed, the artery pulsates forcibly, and raises the finger applied to it: such are the pulsations which characterize inflammation

* See the exposition of the Doctrine of Broussais in this Journal for January last, for an explanation of this expression.

of the laminous tissue of the lungs, the liver, the spleen, and all the the parenchymatous organs." The occasional deviations from this condition have not escaped his attention, and are afterwards considered. Broussais supposes that the larger congeries of capillary vessels, when irritated, establish an obstacle to the circulation which renders the pulse full and hard. This explanation is opposed by Mr. Bégin: because we find such a pulse when no particular obstacle to the circulation can be supposed to exist, as after vigorous exercise, and in one arm alone when this member is exclusively exerted; and because such a pulse is present with slight degree of inflammation of the mucous membrane of the stomach and small intestines, when no considerable obstacle can be supposed to exist; whilst the pulse becomes small, hard, and contracted, when the inflammation has acquired a greater degree of extent and violence. Mr. Bégin thinks that the diversities of the character of the pulse should be attributed to relative diversities of sympathy with the organs affected, from which they arise; and this explanation is not at all inconsistent with the facts that a full soft pulse ordinarily accompanies inflammation of loose parenchymatous structures, and a small hard pulse that of firm extended membranes. In the former case, there is but little pain, and the capillary vessels are freely dilated; circumstances which sympathetically affect the heart, so as to excite and develop its movements. In the latter, there is severe and often intense pain; the free dilatation of the capillaries is prevented, and the heart and arteries are affected so that the dilatation and contraction of the former are impeded by the intensity of the suffering: and the latter are contracted, by a sort of erethism, on the column of blood which traverses them. Every part, Mr. Bégin further argues, has its peculiar sympathetic relations with the heart; and hence the connection of particular states of the pulse with diseases of particular organs, and even particular forms of structure. Hence, different kinds of pulse accompany inflammation of the mucous, muscular, and serous, tunics of the intestines.

On treating of the nervous temperament, the author digresses somewhat from his proper course, and advances some suppositions respecting the cause of the first inspiration of the infant, and the feelings which lead him to take food. He attributes the former to the uneasy sensation excited in the lungs by the presence of blood in them that has not undergone the modification it had received in the placenta; and he thinks that spirituous frictions on the skin only tend to establish the act

by rousing the brain, and rendering it sensible to the call made on it by the lungs. He exercises his imagination in a similar manner, to account for the instincts and passions of animals. We are all acquainted with Darwin's attempts in this way, especially with his reasonings on the pleasure with which men regard the breast of a pretty young woman; to which, however, there happens to be this objection, that a man who has been *brought up by hand* has no such sensations on looking at a *spoon*.

Mr. Bégin discusses, also, in this section, the nature of consciousness and of delirium: and then treats of the influence of the nervous system on the rest of the body in the ordinary actions of life. In this part of the work there are several erroneous indications, or, at least, several assumptions which are not at all well established. He says, the tendons, ligaments, cartilages, and bones, are not penetrated by nerves;* and he adds, that "the free communication of the nervous extremities with the cerebral centre, is not indispensible to the nutrition of the organs in which these extremities are expanded. The *analogical proof* (this is Mr. Bégin's expression) of this fact, is furnished by animals entirely devoid of nerves, and by the tissues which in others want them, the nutrition of which is complete and very active. The direct demonstration of it, consists in the continuance of the phenomena of nutrition after all the nerves of a part have been destroyed, or after they have ceased to perform their functions, as is seen in some cases of paralysis of the limbs with total loss of sensation." Whether nervous influence is necessary for nutrition in animals supplied with nerves, is a matter of doubt; but we are surprised to find Mr. Bégin neglect some of the plainest points of anatomical demonstration, and talk of the continuance of nutrition in a part after the total destruction of its nerves. It is not possible wholly to destroy the nerves of a part, or even to interrupt their communication with their respective centres, without making a similar destruction of the arteries; for the ganglionic nerves are so intimately blended with the coats of the arteries, that it is impossible to divide them and leave the vessels continuous. The fact, too, from which Mr. Bégin infers a proof of nutrition without nervous influence, only warrants

* This statement is so much in opposition to the most probable inferences from known facts,—as the occurrence of pain in ligaments, &c.—that we think it prudent to adduce Mr. Bégin's own words on this occasion: he says, "Les parties qui sont passives dans l'économie, et qui ne sont utile qu à raison de la résistance de leur textures, ne sont pas pénétrées par les nerves: tels sont les tendons, les ligaments, les cartilages, les os."

an inference that the nerves serving for sense and motion are not necessary for nutrition. The notion that this function is subservient to the ganglionic nerves, is not at all opposed by it.

Before a man attempts to frame a theory, he should be well acquainted with the grounds of human knowledge or he may possess a high degree of intellectual power, as a talent for acute and original osbervance, a great facility of comparison of ideas, and a very extensive range of abstract reflection,—and yet produce nothing that will bear the touchstone of truth, whilst he is himself unable to discern the difference between hypothesis and theory. We recommend Mr. Bégin to peruse a book which is, we have reason to believe, becoming pretty well konwn in Paris,—the "General Indications of Mr. PRING; a work which is interesting to all who are engaged in the pursuit of natural science; to metaphysicians; and to moral philosophers; as it develops a system of Principles and Indications which cannot fail to promote the attainment of truth, and which must be particularly interesting to physicians, in consequence of the author having applied those principles to the subjects of Physiology and Pathology in a particular manner, and hence determined, with a degree of precision that admits of no disputation, the extent of our real knowledge in those sciences; whilst his Indications—which are the production of a fertility of thought and originality of views as extraordinary as the solidity of the judgment by which his principles are established,—mark out new routs for the acquisition of knowledge that may occupy, for ages hence, the most active Spirits of our kind in their development.

Mr. Bégin seems to be unacquainted with some very important and well-known facts in physiology: after noticing the return of sensibility in a part which had been deprived of that faculty by a division of the nerve distributed to it, he says "we cannot suppose that reunion of the divided nerve takes place." He uses but very little reserve in drawing such inferences as suit his purposes; for he says that, even supposing that a re-union of the nerve did take place, "a multitude of facts lead us to believe that the necessary communication could not be effected through the cicatrix."

The rest of this section comprises nothing proper to Mr. Bégin, nor any opinions of Broussais that have not been already noticed in this Journal.

A considerable part of the section on the *lymphatic temperament*, is occupied in arguing against the opinion that the

lymphatic system is in a state of relative debility in individuals of this temperament. Mr. Bégin infers, from its being especially developed, that its vitality is particularly developed; and hence, in conformity with a generally received axiom in physiology, that it is particularly liable to disease. Mr. Bégin remarks, that in subjects of this kind, not only is the lymphatic system particularly developed, but that this is the case also with all the tissues supplied only with colourless fluids, as the cellular tissue, &c.; a thing which must readily be preconceived, if what is very probable be admitted, that the whole of the soft structures of the body are constituted merely of congeries of vessels containing either red or white fluids.

One of the most common and most remarkable of the coincidences, of a morbid kind, with the lymphatic temperament, is a want of due solidity, and even, in some instances, a softening of the bones. Mr. Bégin only ventures to give some hints respecting the etiology of this affection, by remarking the well-known fact, that, whenever a spot of ossification appears, there are vessels containing red blood running to that point; and he infers that red blood is necessary for the constitution of bone. But, as animals which are devoid of red blood have bones as firm as those which have such a fluid, (a fact which Mr. Bégin denies,) this inference is not very probable, though it does not want the support of several facts which seem to indicate, in a slight degree, such a notion: thus, ligaments and periosteum ossify on being kept in a state of inflammation for a certain length of time.

The same causes, the author observes, that excite intense inflammation in sanguineous subjects, and in those of the nervous temperament what are called nervous diseases, give rise to hardly sensible inflammation in persons of the lymphatic temperament, and the sympathetic phenomena of such inflammations are but feebly developed. Hence, in the first, the same external causes will produce a degree of inflammation of the mucous membrane of the small intestines that will give rise to fever; and in the last only a mucous diarrhœa, without fever. In these individuals, the lymphatic vessels have the greatest tendency to become the especial seat of irritation; and hence arise the lesions of structure described on a former occasion* in this Journal.

The next chapter is on the *idiosyncracies;* but nothing is adduced here but such obvious inferences from what has already been stated in this article, as render any detailed ex-

* See *Eclectic Repertory for* January last.

tracts unnecessary. There are, however, some further remarks respecting the temperaments, that indicate a multitude of truths that may not be so readily discernible by every reader. Mr. Bégin says, "the temperaments above enumerated are remarkable in this, that any one portion of either of the three several systems, to the development of which they relate, cannot be irritated without all the parts of the same system being, for that reason, more disposed to contract that same irritation. An intimate sympathy unites with each other each of the vascular and nervous extremities of the body; and they cannot be much affected in one organ without being similarly affected in every other organ. Thus, when a sanguineous subject has inflammation in any part, the whole circulatory system is deranged, and the disposition to take on inflammation is increased in every organ. If several tumefactions take place in the lymphatic system in a person in whom this system is particularly developed, the lymphatic glands throughout the body will thence be particularly disposed to irritation; and what are called nervous diseases in any organ, in nervous subjects, increase the general susceptibility of the nerves, and they become affected with diseases similar to the one primarily established more readily than ordinarily. It may, then, be inferred, as a general law, that the appearance and renewal of inflammations, of *neuroses*, and of lymphatic tumors, communicate a new activity to the system especially affected in those diseases respectively, and augment the predominance of the sanguine, nervous, and lymphatic, temperaments. The history of morbid diatheses constantly furnishes proofs of the truth of this assertion; and it is in conformity with this law of the economy, that lesions which are primitively local become *repeated* in diverse parts of the body."

The third chapter treats on the *mucous membranes.* These structures constitute a very important series of organs in the pathology of Broussais; and, as it is through them and the skin that all extraneons matters must obtain admissiom into the system, there can be no hesitation in allowing them to perform a very essential part in the production of the greater proportion of diseases. They are, however, regarded in too exclusive a manner in the work before us; for, after noticing their offices, and giving some examples of their sympathetic relations, Mr. Bégin enters on the consideration of diseases in general, without treating of the laws which regulate the functions of the other structures of the body besides the sanguineous, nervous, and lymphatic systems, any further than

in a very partial way, as the phenomena which they develop are brought forward in connection with those dependant on the properties of the mucous membranes. This, however, is a necessary consequence of the manner in which Mr. Bégin regards the structure under consideration. It is, he says, " the fundamental part of the living economy; all the others are in a manner modelled on it; their functions, and consequently their organic forms, vary according to the wants of which it is the source, and the more or less complete manner in which it prepares the nutritive substance." It is true that all the soft parts of the body are probably constituted of nothing more than developments of nerves, vessels, and the most simple animal fibre, which, perhaps, enters as a constituent into the whole: but, whether or not this be the case, it seems certain that each of what Bichat chose to regard as the elementary tissues of the body, as the cellular, serous, and fibrous, besides those already enumerated, has peculiar relations with other parts of the system in states of disease as well as in that of health; and the exposition of their laws should, consequently, form part of a General Treatise on Physiological Pathology. The sympathies, too, are not treated on in so complete a manner as we might have expected: some of those of the mucous membranes are stated in this chapter, and others are noticed, in a casual way, in subsequent parts of the work. It would, we think, have been better to have adduced what is known respecting their laws in one distinct section; and thus the particular illustrations of them brought forward in the consideration of particular dieases, would have been more perspicuous. Barthez the late Professor of Medicine at Montpellier, took a very lucid view of this subject; and the inferences he drew from it present many very important indications for the treatment of disease. We shall deviate a little more than usual from our analytical course, in order to give an exposition of the view of Barthez, which, we suspect, will be new, as well as interesting, to a considerable portion of our readers.

As all the parts of the animal economy have a more or less intimate degree of vital relation with each other, it is necessary to mention in the first instance, the sense in which the term sympathy is here employed; it is considered, then, that *a sympathy takes place between two organs when any affection of one sensibly and frequently occasions a correspondent affection of the other, without this succession being with probability imputable to chance, to the mechanism of the organs, or to their concurrence of action in a generic mode of function or affection of the living bo-*

dy. This definition excludes from the class of sympathetic actions several which WHYTT, and subsequent writers, have generally confounded with them, and which are termed, by Barthez, *synergies.* Thus, action of the abdominal muscles accompanies the contraction of the bladder in the expulsion of the urine; and this connection has usually been called sympathetic, but it is *synergetic.* There is a concurrence of action in the abdominal muscles and the bladder, having a common and especial object, which is a natural function of the body,—the expulsion of the urine. A similar connection of active power exists between the abdominal muscles and the large intestines; between the same muscles and the glottis, exerted in coughing, certain efforts, &c. A similar synergy *(co-operation)*, for the fulfilment of an especial function, sometimes exists in disease; and hence some morbid actions may be classed amongst the synergies. This distinction of synergies and sympathies, is not a mere scholastic prolusion; it is qualified to establish some important practical indications: for, as the secondary affections of the former class have a specific tendency to the fulfilment of some object, it is obvious that no attempts should be made to remove them when the accomplishment of such an object is desirable: whilst those of the latter class, being merely an extension of disease, and having no such specific tendency, may commonly be removed with advantage; though they sometimes are connected—and probably as *causes*—with a disappearance of the primary affection; and when this happens, and the secondary affection occurs in a part the health of which is of less importance to the welfare of the patient than that of the primary, it may not be advisable to attempt their removal, at least not without some precautionary measures; as the primary affection sometimes recurs on the disappearance of the secondary, and apparently, as a related consequence of its disappearance:

The sympathies are arranged by Barthez in the following orders: 1°, *those of organs having no particular sensible or material connection;* 2°, *those of organs which resemble each other in their structure and functions;* 3°, *those of organs having particular connexions*,—that is to say, connections formed between two or more organs by an intermediate texture, as vessels and nerves common to them; or of a membranous or muscular structure which unites and renders continuous several adjacent organs; and those of organs assembled together in one system, which differs in its structure or functions from the other parts of the body.

The most remarkable of the sympathies of the first order, is that of the organs of voice, the neck, and the thyroid gland, with the genitals. The change which takes place in the *timbre* of the voice at the epoch of puberty, and which does not happen in eunuchs, is generally well known. The diapason of it commonly falls an octave at this period; and hence many who, when boys, were qualified to sing the *contr' alto* in concert, are calculated only for the *bass* after they have arrived at puberty. The neck of women, and especially the thyroid gland, enlarges much and rapidly at the same epoch, particularly after the indulgence of venereal passion; and hence the observation in the verses of Catullus:

> Non illam nutrix orienti luce revisens,
> Hesterno collum poterit circumdare filo:

and the experiments commonly resorted to by the people in Italy, to ascertain whether or not, as they say, a girl is a virgin.

A similar sympathy is observed in some diseases, as the *mumps*, and perhaps in some ulcerative affections of the genitals.

Other sympathies of this order are often manifested in disease of the liver consequent on some injury of the head: pain concentrated in a spot in the head in some affections of the uterus; but the most frequent of this kind are those of the stomach with several remote parts, which were treated on and illustrated by Dr. RICHARD HARRISON, in one of his Gulstonian Lectures, inserted in a late Number of this Journal: next to these are those of the intestines; instances of which are so common and well known, that the production of examples is unnecessary.

The sympathies of the second order are, also, very frequently witnessed; as in the general occurence of inflammation in one eye when it has been established in the other: and RICHTER mentions having seen amaurosis of an eye, previously perfectly healthy, succeed to the same affection in the other, when it happened in this as a consequence of external injury. The sympathetic contraction and dilatation of the pupils in the healthy state, is generally known. MORGAGNI relates the case of a child, twelve years of age, who had suffered convulsions in several parts of the body, which, at length, became confined to one of the hands, the fingers of which were contracted. When an attempt was made to extend these fingers, the otherwise healthy hand was instantly affected with convulsions, and became violently contracted. If only a single fin-

ger of the diseased hand was extended, the corresponding finger of the other hand was affected with convulsions, which continued as long as the attempt at extension was continued. THEDEN (in his *Neue Bemerkungen und Erfahrungen*, u. w. s.) relates the following, somewhat analogous, story. A vesicatory was applied to the right arm of a woman that was paralytic. The plaster produced no apparent effect in the part to which it was applied, but it excited redness and severe pain in the corresponding part of the other arm, during the whole time it remained on the paralytic one. The paralysis, however, now disappeared from the right arm, and affected the left. A vesicatory was then applied to this extremity, the action of which was manifested on the right, causing redness and pain, as on the former occasion. On the paralysis being cured, vesicatories were not found to be attended with any such particular effects. The character and talents of Theden are such as to claim credit for this story.

FRANK (a son of the Professor at Vienna) mentions having seen the case of a woman who had paralysis of one of the arms, and who determined to use efforts to move this arm at the same time that she moved the healthy one: she soon, apparently by this means, recovered the power of motion in it. Frank says that he has tried the same practice with other patients, and that it has sometimes been attended with success.

It is remarkable, that when one of the symmetrical members has attained, by habit, increased facility in the execution of certain movements, the corresponding member has acquired a similar facility in the execution of movements in the contrary direction, and not in the same direction. No plausible explanation has hitherto been given of this curious fact.

Other sympathies of this order are frequently manifested between parts which, without being symmetrically placed in the two lateral divisions of the body, have a similarity of structure and function. These are commonly witnessed in the skin, and in the fibrous and mucous membranes. FANTON mentions the case of a man having acute fever, in whom the portions of the skin on which there had recently been blisters, but which were quite healed, became again inflamed, and suppurated, when other and distant parts had blisters produced on them. The occurrence of inflammation of fibrous membranes in different parts of the body when it has been produced in one part, even by causes acting merely locally, as mechanical violence, is a very frequent phenomenon. WILLIS mentions having seen enlargement of the lymphatic glands in the neck

occur, in consequence, he thought, of very great compression of the inguinal glands by a truss. Cases similar to this are related by BARTHOLIN and LE DRAN. The disordered state of the mucous membrane of the tongue which attends disease of that of the stomach, is another instance of sympathy of this kind.

When several successive alternations of affections have been established between two organs, naturally not particularly sympathizing, by any accidental causes, those organs contract a habit of correspondence of such affections.

The sympathies of the third order are very numerous: we shall merely give an example of each species of them, by way of illustration. The most remarkable instances of those dependent on particular nervous and vascular connexion, occur in the abdominal and thoracic viscera, as between the liver and the stomach and small intestines; the stomach and the heart, &c.; which seem to be explicable by the common origin and close alliance of the nerves of those organs. Those from the continuity of membranes, in vomiting produced by irritation of the fauces; in the pain at the extremity of the urethra from stone in the bladder; itching of the nose from worms in the intestines; various affections of the skin from disorder of the mucous membranes. The progressive extension of diseases of the skin, as well as of mucous and serous membranes, seems often to be dependant on the same laws. There seems, however to be a sympathetic connexion between the skin and some internal parts, that is not, apparently accountable for on this basis: thus, titillation about the ribs causes violent action of the diaphragm, which is not produced by titillation in other parts; and Barthez says, that an ointment in use in France, called *unguent d'arthanata* (composed of violent purgatives) produces vomiting when it is applied to the skin about the region of the stomach; purges when applied about the navel; and causes a great flow of urine when rubbed on the loins.

The sympathies of the whole of the digestive organs, and of the system of urinary organs, are examples of the species last enumerated. It did not, however, constitute any part of our intentions to enter into many details on this subject. We have adduced examples sufficient to show how the whole of the phenomena of this kind may be arranged in conformity with the views of Barthez, and we shall have occasion hereafter to notice many others of the most interesting kind to the medical practitioner, as we proceed in our analysis of the work of Mr. Bégin, who notices several which will, probably,

be novel to many English readers, although this subject has been treated on by Wyatt, Darwin, and Dr. Andrew Wilson, in an extensive manner.

We should remark here, that the foregoing view of Barthez is not adduced as one that is free from obscurities. Some of the phenomena regarded as sympathetic, may be really synergetic, according to the definition of those terms given above: the alterations that take place in the neck and voice at the epoch of puberty, may tend, with the development of the organs of generation, to the fulfilment of some common object; though we cannot discern what that object is, nor discover the train of relations to it. A person, by exercising his imagination, might conceive that the change to the grave and sonorous voice in man, is only in conformity with other of his distinctive characteristics from woman: but why there should be so much greater a development of the cellular texture about the neck than in other parts of the body in woman, is not so obvious. It is not enough to say that it contributes to what is called beauty, because what is morally beautiful is generally found to tend also to some relatively physical good; and it is probable because certain objects tend to such good, that they are regarded as beautiful.

We return from this long digression to the work of Mr. Bégin, and resume our analysis of it where he treats of the sympathetic relations of the mucous membranes. Mr. Bégin makes no distinction of sympathies and synergies, and therefore comprises under the former appellation many phenomena which relate to the latter. We shall, if we produce in our course any observations of this kind, be content to use the terms employed by the author, and leave those readers to make the distinction above mentioned that think it of sufficient importance to engage their attention.

Mr. Bégin first notices the sympathetic relations of several parts of the mucous membranes and the brain, by which painful impressions originating from the mucous membrane of the fauces when there is want of drink, from that of the stomach when there is want of food, and from that of the lungs when there is want of air, are perceived by the sensorium, and by this medium determine the actions proper for their removal. What has been called spasmodic asthma, he says, arises from irritation of the mucous membrane of the lungs, which produces a spasmodic contraction of the glottis, and, by this means, the great difficulty of inspiration which attends that disease. The organic lesions of the lungs, heart, and pulmonary arte-

ries, connected with it, and found after death, are, Mr. Bégin adds, consequences, not causes, of the asthma. This etiology, though it is but hypothetical, has much appearance of probability.

One of the most remarkable of the sympathetic effects of irritation of the mucous membranes of the stomach, œsophagus, and pharynx, is the production of the act of vomiting. Mr. Bégin argues that the membrane of the pharynx and œsophagus has the sympathetic relation with the abdominal muscles necessary for the production of the act of vomiting independent of the stomach, because the proper actions of those muscles are excited by irritating those portions of membrane in an animal whose stomach has been removed, and when the eighth pair of nerves has been divided on each side; which division, he remarks, is followed by paralysis of the stomach. Mr. Bégin thinks that the only sensible action the stomach is capable of is a peristaltic motion similar to that of the intestines, and that the course of this action is reversed in vomiting, as well as in what may be termed *regurgitation:* (to distinguish it from vomiting properly, which is attended with action of the abdominal muscles, which does not accompany regurgitation, as we may readily observe in children, in whom this act is very common.) What has been termed *elective vomiting* (in which substances not fit for digestion are thrown from the stomach, whilst such as are adapted for that process are retained) seems to be only a sort of regurgitation; the stomach being excited to anti-peristaltic action only just in those parts where some improper and irritating substances are present.

The sympathy of the mucous membrane of the stomach and intestines with the skin, is next noticed by Mr. Bégin. "At the instant," he says, "when irritation is developed, and when congestion is established, in the mucous membrane of the parts above mentioned, the cutaneous surface becomes cold, a general shivering affects the patient, the vital actions seem hardly to extend to the external parts of the body: such is the onset of the greater part of idiopathic fevers, which are only *phlogoses* of those membranes. But this state of debility and torpor is soon dissipated: the irritated organ re-acts on the external parts; the vital actions are then roused in them, and are soon raised above their habitual standard; the skin becomes burning; it is dried by an arid heat or covered with an abundant sweat, according as the organs of digestion or of respiration are especially affected."—"The sympathies of

the mucous membranes," he adds, "are more pronounced with the portion of the skin which corresponds with them, than with the other parts of the surface of the body. We observe that the heat is greater in the throat, the neck, the thorax, the epigastrium, the umbilical organ, the hypogastrium, according as the membranes which line the pharynx, the larynx, the trachea, the bronchiæ, the stomach, the intestines, the bladder, and the uterus, are the exclusive seat of irritation." These extracts develop the principal points of some views that were more fully exposed in the Exposition of the doctrine of Broussais, inserted in some late numbers of this Journal, and in the first of the Gulstonian Lectures of Dr. Harrison. The rest of this section is occupied with some considerations on the sympathies of the mucous membranes with the nervous system; but nothing is adduced that had not been noticed under the heads "Physiology" in the Historical Sketches of the Progress of Medicine, lately inserted in this Journal.

The fourth chapter treats on *diseases in general;* but we have arrived so near the limits of the present number, that we must defer an abstract of it till the next, when we shall complete the analysis of this work.

Anatomie und Bildungsgeschichte des Gehirns des Fœtus im Menschen, nebst einer Vergleichenden Darstellung des Hirnbaues in den Thieren. Von FREDERIC TIEDEMANN, &c. (*The Anatomy and History of the Formation of the Brain in the Human Fœtus; with a Comparative Exposition of the Structure of this Organ in Animals.* By FREDERIC TIEDEMANN, Professor of Anatomy and Zoology in the University of Landshut, &c.

(From the London Medical Repository for April, 1821.)

No organ of the animal economy has been studied with greater attention and perseverance than the brain. By many celebrated men, who, since the decline of the dark ages, have successively risen to illustrate and adorn our science, nothing which the spirit of human research could accomplish has been neglected, to discover its intimate structure, and develope the mystery of its functions. In later times especially, Malacarne, Sœmmering, Gall, Spurzheim, and the Wenzels, treading in the steps of Willis, and Vieussens, and Vicq d'Azyr, have distinguished themselves upon this arduous and

entangled path of investigation. Yet, notwithstanding the labour and talent so long employed upon this subject, the organization of the brain remains a problem; and the uses of the numerous parts of which it is composed are still utterly unknown; although their invariable constancy, and the uniformity of their figure, bespeak that they exist for particular ends. And, while numberless hypotheses have been started upon the origin, formation, and composition of the encephalon, Anatomists are yet scarcely agreed among themselves respecting those parts to which the designation of brain is properly applicable.

In the practice of exclusively directing our inquiries to the adult brain, when the organ has necessarily become exceedingly complicatedin its structure, may be found the principal source of this ignorance and uncertainty; and the only efficient mean whereby this obscurity can be dissipated, is the light which may be acquired from the study of the organization of the brain in the inferior animals, and a close examination of its anatomy in the fœtus.

Comparative anatomy, although long neglected and decried, begins at last to fix the attention, and acquire the consideration, in the eye of the physiologist, to which it is so justly entitled. He is, after all, constrained to acknowledge, that by this light alone can he be safely directed in exploring the mutual relations of the various organs; and that the arbitrary impulse, communicated to his ideas by the immethodical observations of his predecessors, can by this mean only be effectually regulated. But it has happened in this, as in all the other branches of physiological research, that few writers have acted upon principles, the correctness of which has been universally allowed; and that most of them, unversed in the knowledge of natural history, which should constitute an essential part of medical education, reject with disdain the inductions furnished by comparative physiology. Dr. Gall, for instance, insists strongly on the absolute necessity of examining the structure of the brain in the whole series of animals provided with it. Yet, failing to confirm the precept by example, he has described and delineated the nerves and cerebral organ of but three or four animals; nor even are the observations which he has made upon them perfectly correct. Thus, notwithstanding the labours of Blasius, d'Arsaky, and other celebrated writers, we really possess, upon the comparative anatomy of the nervous system, simple fragments only, from which nothing conclusive can be

drawn, without a danger of farther embroiling the question, and substituting new errors for old ones: for all general rules respecting any point in anatomy and physiology are necessarily defective, when not deduced from the whole of the facts and observations which may relate to it.

The origin and formation of the brain in the embryo constitute another essential object, which has been equally neglected. From the days of Harvey, it has been well known that the fœtus does not originally possess the form which it is afterwards to exhibit; that in fact, its various parts exist not perfectly in miniature, but that its organization, at first very simple, becomes gradually more complicated; and that its development, instead of taking place by the simple evolution of parts already in existence, is really effected by a successive formation of new ones. Yet the application of this general truth to the physiological history of the encephalon has never hitherto been thought of; although in the work of the Wenzels, and in those of other continental writers, we find some valuable documents on the embryo brain.

It is precisely this application which Professor Tiedemann proposes, in the work now before us, to make. His object has been to prove that the brain of the embryo is not, at every period of pregnancy, an organ so complicated as we see it in the adult; but that it at first appears under a very simple form, which becomes gradually developed, as well by the addition of new parts as by the successive increase of those originally existing. At the same time, an attempt is made to show that the laws which regulate the formation of the brain of the human embryo, and of the inferior animals, are identically the same. With this view, luminous comparisons are instituted between the state of the fœtal encephalon in its different periods and degrees of development, and that of the same organ in the four classes of vertebral animals. From this parallel it results, that the stages through which the human brain successively passes in arriving at perfect development, are all exhibited in some of the individuals composing the series of animals; and that the most simple of them, such, for instance, as are remarked in the first moments of existence, are precisely those which animals, occupying the lowest degree of the scale, exhibit. In order to render more readily appreciable the progress of the formation of the organ, Dr. Tiedemann has first generally described the peculiarities which are presented during each month of gestation, and afterwards proceeds to particular considerations

upon all these parts, both as they exist in man and in the inferior animals. The work, therefore, is naturally divided into two distinct sections. The first of these it would be impracticable to analyze; for as it is purely descriptive, all the details are so closely connected with each other, that the suppression of any one passage would render the whole obscure, and scarcely intelligible. In our attempt to display a general outline of the production, we shall consequently restrict ourselves to the indication of those leading propositions which will admit of being detached from the others, without compromising the clearness and perspicuity of our analysis.

The interesting observations of Dr. Tiedemann relative to the canal of the spinal marrow first demand our attention. It has long since attracted the notice of Anatomists; some of whom have regarded it as a constant appearance; but by far the greater number of writers this assertion has been contradicted; so that to the present day it has been a matter of doubt, whether the canal in question belong essentially to the structure of the organ, or be simply a consequence of malformation. From the researches of Dr. Tiedemann, it appears that the spinal marrow represents a canal, continuous, by means of the calamus scriptorius, with the fourth ventricle, which is, properly speaking, only a dilitation of it. The borders of this canal, at first loose and floating, adhere, towards the third month; and the tube which results from this cohesion afterwards diminishes progressively in diameter, in proportion as the pia mater, which lines it, secretes new cerebral matter. In the adult, a few traces of it only remain in the superior part of the medulla. From this it is evident that the continuance of the canal after birth, of which many examples are recorded in the writings of Portal, depends simply on defective nutrition, and in nowise bespeaks the influence of any morbific cause.

The canal of the spinal marrow, as Dr. Tiedemann observes, must not be confounded with other canals, which Gall asserts that he has discovered in the medullary chord of newborn children, and even of those at a more advanced age. These canals he describes as having no communication with the fourth ventricle, but as extending along the crura cerebri, beneath the tuber annulare and the tubercula quadrigemina, to the optic thalami, and forming, in the interior of these last, an excavation of the size of an almond. The existence of such canals Dr. Tiedemann formally denies, and asserts that they are produced by forcible inflation. He has never

seen them in the human fœtus or adult, nor in the inferior animals; while the canal of the spinal marrow is invariably observed; and this, although obliterated in the human subject at an adult age, remains open for life in birds, reptiles, and fishes.

It has been asserted by Dr. Gall, that the spinal marrow is composed of ganglia, or swellings of the cortical substance, the number of which is equal to that of the spinal nerves. The German professor, reasoning upon the facts which he has drawn from observation, endeavours to prove the inaccuracy of the assertion. He remarks, that if the ganglia were the first formed parts of the spinal marrow, and the latter resulted from their cohesion, we ought to see them particularly distinct in the embryo, the nervous system of which is very simple, and scarcely half developed; but in fact, we discover nothing in the spinal marrow which can be compared to ganglia. Such arguments are irresistible: and again, the opinion of Dr. Gall respecting the ganglionic structure of the spinal marrow, implies a contradiction with a passage in which this writer says that each half of the spinal marrow should be considered as a membrane reflected on itself. If this last proposition be correct, as is incontestibly proved by observation, how are we to reconcile it with the preceding opinion?

Dr. Tiedemann at the same time attempts to prove that the grey or cortical substance is not the matrix of the nerves, as his celebrated countryman has asserted; and that it is not destined for their production. He, in fact, declares that it is formed subsequently to the white or medullary substance; and that the origins of all the nerves, as well spinal as cerebral, are apparent, ere yet there exists the slightest trace of it. Yet he agrees with Dr. Gall, that the cortical substance exists in greatest abundance in all those points of the adult spinal marrow from whence the largest nerves proceed. It is very early seen, he observes, that the spinal marrow of the fœtus presents a greater diameter, and that its canal is largest about the origin of the nerves destined to supply the thoracic and pelvic extremities. Towards the close of pregnancy, when the parietes of the chord have acquired an increase of substance from the formation of new medullary fibres, and the capacity of the canal has been diminished by the successive depositions of cortical matter—such deposition is found to be most abundant at the points above mentioned. To give additional weight to his proposition, Dr. Tiedemann traces a

rapid sketch of the researches which he has made at Venice, on the spinal marrow of the torpedo, the different species of silurus, and other fishes of the Mediterranean. From these curious observations, which precisely correspond with those of d'Arsaky; it appears that the origins of the nerves invariably present particular swellings, or ganglia of the cortical substance, when the nerves, or the organs which they supply, are strongly developed, or when peculiar organs exist, of which other fishes are destitute.

Reasoning from the highly vascular structure of the cortical substance, and from the general principle, that the energy of organs is always in direct proportion to the quantity of blood which they receive, Dr. Tiedemann concludes that the gray substance is designed to invigorate the action of parts of the brain and of the nerves—an office which, in his opinion, it fulfils by causing an increased afflux of blood to them. Dr. Gall had, indeed, attributed the same function to this substance, which he considered as an apparatus of nutrition and reinforcement; but he thought at the same time, that it acted in augmenting the mass of white nervous fibres, by the addition of those which originate from it. If it be observed that the cranial processes of the spinal marrow are more strong and thick when they originate from cerebral organs, rich in cineritious substance—such, for instance, as the corpora striata—this opinion acquires a very high degree of probability. Dr. Tiedeman, nevertheless, has endeavoured to controvert it; but here, it would seem, his evidence is defective. He shows that the parts which have been distinguished by the name of organs of reinforcement are at first but very thin and narrow membranes, evidently originating from the cerebral processes of the spinal marrow. He adds, that when, of two parts, one produces the other, the first must necessarily be that which originally presents the largest volume. Yet must it be acknowledged that, in his observations on the cortical substance, there is not that degree of perspicuity which might be desired; and that, if not exactly involving a direct contradiction, his opinions respecting the period of its formation, display somewhat of inconsistency. In fact, he represents this substance as appearing subsequently to birth; and yet he asserts that, although the embryo-brain presents a pulpy mass of reddish colour, and uniform throughout, the blood vessels are most numerous in those points where the gray substance is afterwards to appear. What greater reason can there then be to admit in the embryo the existence of a medullary than

that of a cortical one, under the respect of mere colour alone. In the second place, even admitting, with Dr. Tiedemann, that the formation of the cineritious substance really takes place subsequently to the period of birth, it by no means necessarily follows that the only use of this substance is to produce a sort of local erection by inviting an augmented flow of blood. The evident increase of the medullary fibres which traverse it—an increase more than once noted by Dr. Tiedemann himself,—proves that Gall is not wrong in regarding it as an apparatus of supply; and that, in consequence of its profusion of blood vessels, it contributes to the increase of the medullary secretion, and to the multiplication of the fibres of the brain in those points where it is necessary that they should exist in the greatest abundance.

The continuity of the medulla oblongata and crura cerebri is now generally, but not universally admitted by anatomists. Dr. Tiedemann, however, incontrovertibly establishes it, by showing that the pons varolii is only formed about the fourth month; and that, previously to this period, nothing is interposed between the fibres of the spinal marrow and the crura of the encephalon.

He describes, in the following manner, the distribution of the processes of the spinal marrow in the interior of the brain: each of the two chords of which it is composed divides, in the medulla oblongata, into three other smaller ones. The internal or pyramidal, situated on the side of the exterior longitudinal groove of the spinal marrow, forms, till the fourth month, a large flat surface, as in birds, reptiles, and fishes; for the pyramidal eminences are not developed till the fifth month. The decussation of it with that of the opposite side, as already described by Vesalius, Santorini, Winslow, Lieutaud, Sœmmering, and Gall; but denied by Haller, Vicq d'Azyr, and Monro, is here confirmed. Dr. Tiedemann has clearly described, about the fourth or fifth week, this decussation in which the other parts of the spinal marrow do not participate —a circumstance not to be lost sight of in the explanation of a number of physiological and pathological phenomena. The middle, or olivary chord is placed, above the preceding; and Dr. Gall is accused of having omitted, in the imperfect description given of it by him, the ascending fibres which this body furnishes to the tubercula quadrigemina, and which unite with those of the opposite side to form the vault of the aqueductus sylvii. These fibres become apparent, when a thin layer of the amorphous medullary substanee is removed

from the body which supports the tubercles. The other fibres of the chord proceed anteriorly in the optic thalami, where they unite with those of the internal chord. The corpora olivaria do not appear till towards the close of the sixth month or commencement of the seventh. Here Dr. Tiedemann again takes occasion to show that his countryman is deceived in considering these bodies as ganglia from which the chords themselves originate. Lastly, the external or cerebellic chords (the corpora restiformia of modern anatomists) arising from the lateral and posterior part of the medulla, form the expanded parietes of the fourth ventricle, and afterwards penetrate into the cerebellum.

The internal and middle chords, uniting, dip into the optic thalami, or form, by expansion, these bodies. The fibres composing them are there very perceptible, if a thick pulpy stratum be scraped from their superior and internal surface. From the internal side some fibrous portions are detached, and take a direction externally towards the mamillary eminences. All the other fibres continue to proceed from behind anteriorly, and from within outwardly, beneath the corpora striata, to the hemispheres of the brain. Their radiation, or fan-like disposition, is perceived on separating the corpora stiata from the crura cerebri, and turning them back. At the same time may be observed several fibres which run into these bodies. The fibres engaged in the hemisphere take a direction anteriorly, posteriorly, and laterally; afterwards rise upwards, and then turn inwards: the hemispheres of the brain are, therefore, membranes reflected upon themselves from without inwardly, and from before backward; which gives rise to the radiation of the fibres of the crura cerebri. Hence it is easy to comprehend why they present greater thickness externally than internally. This disproportion results from the fibres of the crura cerebri on the external side being very compact; while, on the internal side, they have, by expansion, lost much of their thickness. Thus also it happens, that in the fœtus the roof of the lateral ventricles, instead of being flat, and on a level with the corpus callosum, presents an arched form, and rises above this transverse septum. It afterwards descends gradually in proportion as the mass of diverging fibres acquires an increase of weight and volume. The strongest proofs that can be given of the correctness of these different assertions is, that when the brain, at the close of the second month, yet quite albuminous, does not display its organization till after a long immersion in alcohol, the he-

mispheres represent two real, but extremely delicate membranes produced by the expansion of the crura cerebri, and which are not only continued on the optic thalami, but are yet free in their internal and posterior borders. About the third month they may still be readily, and without any laceration, unfolded as a plain membrane. For this purpose, it is only necessary to revert them with a little precaution externally.

Yet Dr. Tiedeman, besides the radiation of the fibres in the direction just indicated, and which is the principal, admits another circumferential one: this consists of fibres formed upon the first set of arched fibres, and proceeding directly outward. He explains the formation of this second order of fibres by observing, that the vessels of the pia mater, which are evidently destined to secrete and nourish the cerebral substance, separate from the blood the mass of which it is formed; that this, therefore, is deposited in strata from within outwardly, and crystallizes, if the expression may be employed, under the form of fibres, which emplant themselves into those previously existing.

The growth of the pia mater, and gradual opposition of new strata, cause the parietes of the hemispheres to increase in thickness. In favour of this explanation, an attentive survey of the substance of the encephalon furnishes many arguments. If the pia mater be detached from the brain, parcels of the cerebral substance remain adherent to its internal surface; because the exterior, having been last deposited, is yet attached to the vessels of the membrane. This superior stratum of the encephalon, when exposed, appears soft and destitute of fibrous structure. The microscope shows the existence in it of numerous minute globules. On a division of the brain, one discovers the fibres whereon this thin stratum of formless pulp rests, which has not yet had time to assume a fibrous disposition. It is by this second circumferential radiation of nervous fibres that Dr. Tiedemann explains the formation of the convolutions, which scarcely show themselves till towards the seventh month. Dr. Gall has nearly said the same as to the distribution of the crura cerebri in the hemispheres across the optic thalami and corpora striata; but he differs in his theory of the convolutions; these he represents as proceeding from the folding of the membranes of which the hemispheres are originally formed. Observation and reasoning alike concur in showing the accordance of Dr. Tiedemann's opinions on this subject with nature; for the hemispheres are smooth

during the whole time that their parietes present but little thickness; while, at this period, they ought, according to the received hypothesis, to be more wrinkled than at any other: nor, moreover, are the convolutions at all perceptible on their internal surface—that is, in the interior of the lateral ventricles. The method which Dr. Gall employs to show that the convolutions of the brain may be unfolded into one plain expanse of membrane, invariably produces, in our author's opinion, rupture of the interior strata of fibres, sent from without inward by the crura cerebi, and is utterly inconclusive. From this statement it is obvious that Dr. Tiedemann does not consider the convolutions to be folds adherent by one of their surfaces, as Gall has depicted them.

It follows, from this disposition, that the lateral ventricles are formed later than the canal of the spinal marrow, and the third and fourth ventricles. In other respects, Dr. Tiedemann agrees with his celebrated countryman; for he attaches little importance to the ventricles, and regards them as, like the other cerebral cavities, the simple result of the mechanism of organization, and destined to afford to the pia mater a more extensive surface for the transmission of blood to the substance of the encephalon.

That, with some slight modifications, Dr. Tiedeman, adopts the opinions of Gall, Reil, and the Wenzels, with regard to the distribution of the fibres sent off by the crura cerebri, has just been seen. It is not the same with the system of converging fibres for the apparatus of the commissures, which he rejects as one of the chimeras engendered in the imagination of Dr. Gall. According to the latter, the converging fibres proceed from the gray substance of the convolutions, cross those which ascend from the crura cerebri, and take an inward direction to give origin to the corpus callosum. This, according to Dr. Tiedemann, is incorrect; for the corpus callosum already exists in the fœtus about the fourth or fifth month; a period when the brain exhibits neither convolution nor cortical substance. It is obvious, then, that the converging fibres cannot arise from parts which have no existence; and Dr. Gall would have been convinced of it by collating his descriptions with his figures, which are strikingly exact. The corpus callosum is, in fact, formed by the union of the fibres which ascend from the crura cerebri, and which, having acquired sufficient length, unite transversely with those of the opposite side. Hence it happens, that without existence during the first months, it afterwards gradually

increases in proportion as the fibres of the hemisphere are elongated, and forms from before backward, extending posteriorly as the hemispheres reach the tubercula quadrigemina, and afterwards the cerebellum. Reil fell into the same error as Dr. Gall, and made a particular and distinct system of transverse fibres of the corpus callosum. This happened from his having restricted his inquiries solely to the adult brain, and not having clearly appreciated the laws which regulate its formation: yet ought he to have been aware that this was an erroneous manner of viewing the corpus callosum, since he states that he had observed, in an adult whose brain was enormously distended by a dropsy of the ventricles, that the fibrous fasciculi of the corpus callosum, and those of the cruri cerebri, met at a sraight line on the border of the arched and anterior part of the corpus striatum. Perhaps he had even imbibed a confused notion of his mistake; for, after having detailed in his *Archives* the interesting case of a healthy but idiotic woman, aged thirty, who had been cut off by apoplexy, and in whom the corpus callosum was found wholly deficient, he inquires whether such defect might not be the result of an obstacle to the primordial formation of the brain. This, then, nothing more than a simple conjecture, has since been established as an incontestible truth by the observations of Dr. Tiedemann.

In treating on the fornix, our author shows that Dr. Gall has mistaken its structure. This anatomist classes it among the commissures of the brain, and thinks it also formed by the converging fibres. Reil was more correct upon this subject; and the description which he has given of the fornix absolutely accords with that of Dr. Tiedemann. According to them, this portion of the brain is formed from above downward, and from before backward. Its anterior pillars result from fasciculi of fibres which shoot out from the optic thalami, make a turn, and then rise, after having descended into the mamillary eminences. Dr. Gall, if he have not correctly described this disposition, has, at least delineated it with the utmost accuracy. The fornix, like the corpus callosum, extends horizontally backward, in proportion as the mass of the hemispheres becomes more developed.

It is thought by most anatomists, that the laminæ of the septum lucidum descend from the corpus callosum to the fornix. Dr. Tiedemann shows the contrary, and proves, from the direction of their fibres, that they originate from the anterior pillars of the fornix. Thus he positively assigns to it a place among the cerebral organs; while, by Gall and Reil, it

has been classed among those objects whose connexions and office are yet unknown. The cavity which intervenes between the parietes of the septum presents backward in the fœtus, a small triangular orifice, situated betwixt the anterior pillars of the fornix and the anterior commissure. This orifice establishes a communication with the third ventricle; and through it the pia mater penetrates into the cavity of the third ventricle. Dr. Tiedemann has sometimes found it open in the adult; whence it follows that the ventricle of the septum is not so absolutely destitute of connexion with the other ventricles of the brain as most anatomists contend.

Dr. Gall has committed, with regard to the anterior commissure, the same error as he had previously done respecting the corpus callosum and fornix; for he attributes its origin to his imaginary system of converging fibres. Willis had before represented it as proceeding from the corpora striata, which approaches nearer to the truth; and professor Chaussier has derived it with yet greater correctness from the crura cerebri. Dr. Tiedemann unquestionably proves that it originates from the fibres of these last-mentioned bodies after their issue from the corpora striata. Some of these fibres proceed anteriorly, bend inwards, and unite with those of the opposite side; so that the anterior commissure, the traces of which are only perceptible about the third month, is a medium of union between the radiations of the crura cerebri, the corpora striata, and anterior lobes of both sides.

In the pineal gland and its pedunculi, Dr. Gall sees only a simple gland; but by Dr. Tiedemann it is considered as a real commissure of the two swellings of crura cerebri, or of the optic thalami, strengthened by an accumulation of grey substance.

In describing the tubercula quadrigemina, of which Reil alone had previously exhibited the structure with any thing like correctness, our author confirms the opinion of those anatomists who regard the anterior tubercles as the origin of the optic nerves; but he thinks not with Gall and Cuvier, that the posterior give rise to the olfactory; otherwise the long discussion into which he enters respecting what ought to be called tubercula quadrigemina in birds, although clear and interesting, contains nothing but what has already been said by Gall and Cuvier.

Reil has described, with greater precision and perspicuity than Dr. Gall, the distribution of the fibres of the crura cerebri at their issue from the optic thalami, which seemed to

him destined not only to increase them, but to augment their extension, and impart to them a circular and radiated direction. Dr. Tiedemann adds little to what is already known respecting these bodies. The crura cerebri possess more fibres on their issue than at their entrance; that is, the succession of numerous vessels which run into these ganglia, give activity to nutrition, increase the mass, and make them the principal focus of vitality, as well of the cerebral processes of the spinal marrow, as of their lateral expansions, the hemispheres. The same observations are applicable to the corpora striata, as Gall and Reil have long since shown.

The Wenzels were the first who depicted the cornu ammonis as a fold of the hemisphere formed by the crus cerebri, and united to the posterior pillar of the fornix, to form the grey corpus fimbriatum. Dr. Tiedemann sees, in the hippocampus, a mass of reinforcement of the posterior pillar; because a thick stratum of cineritious matter is deposited upon the descending fibres of this pillar

Dr. Gall, again makes the tuber annulare to proceed from the converging fibres. These he supposes to issue from the grey substance of the cerebellum, of which he with reason calls the pons varolii the great junction or commissure. The inaccuracy of this assertion Dr. Tiedemann attempts to prove by the same arguments as he has employed on other occasions. The pons varolii, he contends, already exists at a period when there is yet no grey substance on the surface of the cerebellum. It arises from the medullary centre of the latter, and not only increases in breadth and thickness, in proportion as the corpora fimbriata and the hemispheres of the cerebellum are developed, but, on examining it in the vertebral animals, it will also be observed to increase in dimensions in the same proportion as the medullary masses which give rise to it.

The opinions of Dr. Tiedemann respecting the relations of the spinal marrow and the brain, have been reserved, in order that they may be last exposed. From the details which we have already entered into, the nature of them will be readily foreseen. By Galen, Riolanus, Fallopius, Willis, Vieussens, Winslow, Haller, and others, the spinal marrow was considered as a prolongation of the encephalon; and this opinion the greater number of anatomists adopted. Dr. Gall, on the other hand, asserted that the brain is an elongation of the spinal chord. Such view of the subject, however, is not entirely novel; for it has been obscurely hinted at by many

of the Grecian writers: and Bartholine, Malpighi, and especially Fracassati, have not only embraced, but attempted to demonstrate it. All the difficulties which have been started against the doctrine of his countryman are completely done away by Dr. Tiedemann's researches, the interesting results of which may be reduced to the following principal heads:—

1st. In the commencement of pregnancy, especially about the second month, the earliest period at which the brain can be rendered perceptible by the action of alcohol, this organ is very small in proportion to the spinal marrow. In fact, it results from the prolongation upward and forward, of the two principal chords, the olivary and pyramidal. All its superior part is open, or, more properly speaking, forms a broad gutter, which at once comprehends the third venticle, the aqueductus sylvii, the fourth ventricle, and calamus scriptorius. This gutter is uninterruptedly continuous with the canal which traverses the whole length of the marrow.

2dly. The cerebellum evidently originates from the spinal marrow; from the lateral parts of which arises, on each side, a small flattened chord. These two, at first so distinct and separate that they may be readily parted without laceration, afterwards unite so as to form the roof of the fourth ventricle. Then only the brain, viewed from above, ceases to represent a gutter; and the laminæ and branches of the cerebellum are formed at a much later period.

3dly. The mass which supports the tubercula quadrigemina equally shows itself in its origin, under the form of two small thin membranes, which arise from the olivary chords of the spinal marrow, and which, when they cease to be distinct, represent a vault covering a large ventricle, whose successive contraction gives rise to the aqueductus sylvii.

4thly. The pyramidal chords of the spinal marrow, which take a direction below upward, and from behind forward, after having produced two swellings, or ganglia, the optic thalami, and corpora striata, each terminated by a lamina, which bent from before backward, and from the side towards the superior and internal part, forms the commencement of the hemisphere of the brain. These membranes and thin hemispheres are so small at the second month, that they scarcely cover the corpora striata. In proportion as they increase they extend backward, and cover, at the third month, the optic thalami; at the fourth, the tubercula quadrigemina; and, at the sixth or seventh, the cerebellum. The lateral ventricles result from their invertion.

5thly. The medullary fibres of the pyramidal chords, previously to the formation of the tuber-annulare, are immediately continuous with those of the crura cerebri; from whence the eye may readily trace them in the optic thalami, and corpora striata, and see them afterwards spreading and radiating in the hemispheres.

6thly. The parietes of the hemispheres gradually increase in thickness in proportion as new strata of cerebral substance are deposited on their surface; and convolutions are not decidedly seen till towards the close of pregnancy.

All these combined facts clearly emonstrate, in the opinion of Dr. Tidemann, that the brain and cerebellum proceed from the spinal marrow; or that, to employ a modern expression; they are an efflorescence of it. In running through the scale of animals, ample conformation may be found of the assertions here advanced. The structure of the encephalon and spinal marrow becomes complicated in proportion as we ascend from fishes to reptiles, birds and mammalia. If the contrary opinion were correct—if the spinal marrow were derived from the brain, the cerebrum and cerebellum must necessarily be found the first formed in the fœtus, which is not the case. It is equally necessary that, in the animal scale, where it is impossible to mistake a gradation in the figure and development of the organs, that a complete brain should exist previously to any trace of a spinal marrow; but this is never observed. Comparative anatomy, on the contrary, shows that the spinal marrow is very large in the inferior classes of animals, while the brain forms but a small and delicate prolongation of it; and in ascending from reptiles to birds and mammalia, it is seen gradually to increase in volume and complication, as absolutely takes place in the fœtal encephalon. Other arguments might be adduced in support of this proposition; but they are deemed superfluous by Dr. Tiedemann, who would despair of convincing any one not perfectly convinced by the facts already enumerated.

From the imperfect sketch which has just been traced, some idea may be formed of the nature and merits of Dr. Tiedemann's work. That he has not wholly kept clear of slight inaccuracies must be allowed; nor will it be thought wonderful when the difficulty and complication of the subject, and the soft and delicate structure of the organs which he has been examining, are duly considered. He relates, in a plain but sometimes heavy style, the result of his observa-

tions and researches on the anatomy of the brain; and his luminous descriptions are greatly assisted by carefully-drawn figures, wherein are exposed numerous minute details, of which it would be otherwise difficult to convey a correct idea. It moreover appears, that he has preserved in his museum, specimens of the embryo brain in every stage of its development, in order to convince the sceptical of the accuracy of his assertions. This method he considers indispensable at a period when, unfortunately, we too often see described and delineated objects of which nature has never exhibited the model.

Upon the whole, the work of Dr. Tiedemann is perhaps one of the most extraordinary productions which has appeared in the present century; and we have little doubt but that the assertions contained in it will acquire ample conformation from the labours of future anatomists: for from the precept of our immortal Bacon, which he has selected for his motto, and which we close our long analysis with strongly recommending to the attention of all medical writers, he seems never to have wilfully or consciously deviated: *non fingendum est, aut excogitandum, sed quid natura faciat, observandum.*

De L'Auscultation médiate, ou Traité du Diagnostic des Maladies des Poumons et du Cœur, fondé principalement sur ce nouveau Moyen de l'Exploration, par R. T. H. Laennec, D. M. P. Médecin de l'Hôpital Necker, &c. &. 2 tom. à Paris, 1819.

(From the Quarterly Journal of Foreign Medicine and Surgery for 1819—20.)

This is a very interesting and important work. It submits to the world a new system of diagnosis, applicable to those diseases in which the obscurity and uncertainty of the diagnostic means at present in use, have often been acknowledged and lamented.

The author, M. Laennec, is a pupil of the celebrated Corvisart, and has, for the last eighteen years, devoted himself to the study of pathological anatomy, the fruits of which are found in the variety of new and interesting observations with which he has enriched his work. The observations before us are the result of three years exclusive attention to the subject.

To disarm any prejudice which the title of the work may create, and engage a favourable attention to the author's subsequent details, we shall prefix to our own analysis of the work, the opinion of the committee of the Institute who were appointed to examine its merits.

The following extract is from the proceedings of the sitting of 29th June, 1819:—

"In one of the preceding sittings the Academy deputed Messrs. Portal, Pelletan, and Percy, to make a Report on a Memoir, read by Dr. Laennec, and entitled '*A memoir on* 'AUSCULTATION, *by the aid of different acoustic instruments,* '*employed as a method of examination in diseases of the tho-* '*racic viscera, and particularly in phthisis pulmonalis.*"

"The trivial advantages which are derived in most cases from the percussion of the chest, according to Avenbrugger's method, and the facility with which sound is transmitted through solid bodies, suggested to the author the idea of attending, by the aid of intermediate substances, to the different sounds which the movements of the respiratory and circulatory organs may produce in the interior of the chest, and to inquire whether the sounds in question gave more certain signs than those which we already knew, relative to the diseases of the organs contained in this cavity. He believed this question might be answered in the affirmative. The *auscultation* of sound produced by the mechanism of the voice and respiration,* by the pulsations of the heart, and in certain cases by those of the aorta, is, according to him, possible and even easy, by means of an intermediate body, which, according to circumstances, may be a full cylinder, a thick tube, or a tube widened at one of its extremities in form of a funnel. The first instrument is most convenient for ascertaining the pulsations of the heart and aorta; the second serves for examing the voice, and the third for the various sounds produced by respiration."

* The author uses another term, which we find great difficulty in translating—it is râle. He explains the sense in which he uses this term elsewhere, (vide S. 174.) "Under the name of 'râle' is commonly denoted that confused murmuring noise which is heard in the dying, caused by the air passing with difficulty through the saliva, which the lungs are no longer able to expel. For want of a more generic term, I take the word in a more extended signification, and understand by 'râle' all the noises produced by the passage of the air, during the act of respiration, through whatever fluids may be found in the bronchiæ or pulmonary texture." Of these the author enumerates four principal varieties, which he thus describe.:—1. Le râle humide, ou *crepitation.* 2. Le râle muqueux, ou *garguillement* 3. Le râle sec sonore, ou *ronflement.* 4. Le râle sibilant sec, ou *sifflement.*"

The author presents to the academy only a part of his researches relative to the investigation of the voice. We subjoin a short analysis of it.

"The instrument which M. Laennec uses for this purpose is a cylinder a foot long, sixteen lines in diameter, and perforated in its centre by a canal about three lines in diameter. When this cylinder is applied to the chest of a healthy person, in the act of speaking or singing, nothing is heard but a kind of low murmuring (frémissement) more distinct in some parts of the chest than in others. But, when there is an ulcer in the lungs, this murmuring is changed, and the effect is altogether singular. The voice of the invalid then ceases to be heard by the ear which is disengaged, and it comes to the observer entirely through the canal formed in the cylinder. We have established this fact on many consumptive persons whom the author has brought to us. It appears to us striking, and very likely to furnish a certain diagnostic sign of some changes in the lungs, which in the actual state of medicine could scarcely be imagined. M. Laennec attributes this phenomenon to the stronger sound of the voice in a cavity more extended than the bronchiæ. His opinion appears the more probable, as the same phenomenon occurs when the cylinder is applied to the trachea or larynx. This phenomenon, to which M. Laennec gives the name of pectoriloquism, presents several varieties, which the author distributes into three classes, under the names *perfect*, *imperfect*, and *doubtful* pectoriloquism. Many of these varieties point out circumstances of the utmost importance relative to ulcers of the lungs, and especially as to their size, their state of fulness and emptiness, and the consistence of the matter contained in them. The author has confined himself to the simple exposition of these facts, and of the consequences which may be drawn from them in the diagnosis of phthisis pulmonalis. He has not thought it right to take up the time of the academy with the other practical inferences which it is possible to deduce from them.

"Although the study of pulmonary consumption by the auscultation of the voice is the principal object of the Memoir we are now noticing to the academy, we have thought it incumbent upon us to verify also what the author advances concerning the auscultation of respiration, and of the heart's pulsations. We have, in consequence, listened with the cylinder to the respiration of a healthy man, in different parts of the chest, and we have found that it is heard distinctly in all

parts of this cavity which correspond to the lungs. We have found likewise that the motions of the heart are heard in the most distinct manner; and therefore it appears to us, that the author's assertions as to the possibility of obtaining by these two kinds of auscultation, certain signs of many diseases of the lungs and heart have, at least, a very high degree of probability.

"The idea of applying the ear to the chest, and of ascertaining in this way the symptoms of the alteration in the organs which it contains, is not altogether new. Hippocrates (Lib. II de Morbis) recommends this application at the side of the thorax, to discover the existence of empyema. But this mode of proceeding, according to M. Laennec, absolutely gives no indication.

"Some physicians had also been long in the practice of applying the ear to the region of the heart, in order to discover more accurately the strength of its pulsations; but this method had never given satisfactory results, for reasons which the author in part explains, and which he proposes to develop with more details in another memoir.

"Your committee, in rendering to Dr. Laennec (already most creditably known by his learned researches on different medical subjects) all the justice which is due to him, have the honour to assure the academy that this physician, of whose titles to confidence and public esteem they are not ignorant, has merited its particular favour, and a special testimony of its approbation of this new work.

(Signed) PORTAL, PELLETAN,
PERCY, *Registrar.*

"The Academy approves the Report, and adopts the conclusions.——DELAMBRE."

In a work comprising so much variety, and consisting of two octavo volumes, it is difficult to give such an abstract as will convey a correct idea of the labour and intelligence of the author, and do justice to the zeal and ability which he has displayed. His object will, therefore, be best explained in his own words. "Convinced," says he, "of the practical utility of the method of investigation which I am proposing, I have thought it my duty to neglect no means of making the practice general; and it appeared to me, that the best way in which I could do this, was to connect the exposition of this method with a more exact description than any which hitherto exists of those organic changes which it is its object to discover. This plan serves at once to render its employment

more easy, to demonstrate its advantages, and to connect the remembrance of it with that of many other facts.

"The principal object of my work being to make known the advantage which may be derived from the use of the cylinder, in distinguishing the different diseases of the lungs, I have thought every thing should be subordinate to this purpose; and, even the facts from pathological anatomy; although occupying a very considerable space, are only inserted as accessaries. I have, therefore, been led to separate things, which in a treatise of medical practice, or of morbid anatomy, ought to be united. The first part of this work, for example, is almost entirely devoted to phthisis pulmonalis. Many important facts referrable to the same disease are, however, found in the second, the third, and the fourth part; because the respiration, *(le râle,)* and even the pulsations of the heart, afford indications relative to many circumstances of this disorder.

"I have cited but few authors. The path which I had to follow was nearly new. I have confined myself almost entirely to the works of M. Corvisart and M. Bayle, as presenting very nearly the actual state of our knowledge of diseases of the heart and lungs. If I have sometimes combatted their manner of viewing the subject, I hope that no one will misinterpret the motive which has led me to do so. United from the commencement of my studies to M. Bayle, by ties of the most tender friendship, and the disciple of M. Corvisart, no one has been led more than myself to appreciate their personal merit and that of their works; and although sometimes obliged, in defending the interests of science, to attack the opinions of my master and those of my friend, I do not feel the less gratitude for all that I owe them. It is more easy to cultivate a well prepared field than to clear a rough barren soil. I must, besides observe, that the works of M. Corvisart, edited by strangers, are very far from giving an idea of the author's meaning in its full extent. It is to be regretted, that his numerous occupations, and a state of deplorable bodily health, should not have permitted him to accomplish the task himself. The uncertainty in the signs attributed to each malady, the vagueness of the descriptions are sufficiently striking to those who, educated by this great physician, have so often witnessed the boldness and certainty of his diagnosis. This, however, depends in part on the circumstance, that he employed that indefinable tact which constitutes a great part

of the art of medicine, and which he possessed in the highest degree."

M. Laennec begins his work with some observations on the difficulty of forming a diagnosis in diseases of the lungs. He adduces the testimony of Baglivi, to show that the diagnosis of pulmonary diseases must necessarily be incomparably more obscure than that of the affections of any other internal organ. In fact, the diseases of the brain, by no means numerous, are known, in general, by certain and striking symptoms. In the affections of the abdomen, the parietes being soft and pliant, we can feel the organs which they contain, and judge to a certain extent of their size, their position, their degree of sensibility, and the accidental productions which may be there developed. Thoracic diseases, on the contrary, being extremely numerous, and very diversified, have almost all similar symptoms. Cough, dyspnœa, and in some expectoration, are the principal and most striking; and the varieties which these symptoms present, do not correspond in a regular manner to the diversities of organic changes which occasion them; so that the most experienced physician is often at a loss. "I am not afraid," says the author, "of being contradicted by those physicians who have been employed regularly and for a certain time in morbid dissections, when I assert, that before the discovery of Avenbrugger, the half of peripneumonies and acute pleurisies, and almost all cases of chronic pleurisy, might necessarily be mistaken; and even in cases where the examination of an experienced physician might lead him to suspect something, it could seldom inspire him with sufficient confidence to determine him to employ a bold remedy in consequence of such a suspicion. Percussion of the chest, according to the method of the ingenious observer just recited, is certainly one of the most precious discoveries with which medicine has ever been enriched. It has subjected to the immediate decision of the senses many diseases which, till that time, could only have been known by general and equivocal symptoms, and has rendered the diagnosis as certain as it is easy. This method, however, leaves much to be desired. It often points out nothing in pulmonary consumption, and cannot in any case distinguish this disease from chronic peripneumony. Even in peripneumony it affords but little aid, when the inflammatory obstruction occupies only the centre of the lungs, or when the two lungs are affected slightly or nearly equally. It affords no proper signs by which to distinguish this disease from pleurisy, hydrothorax or any

other effusion into the pleura. It furnishes no means of knowing pneumo-thorax, or rather it becomes an almost necessary cause of error in this case. It does not enable us to discover diseases of the heart, except when this organ is become greatly enlarged; and too often death occurs before the disease arrives at this degree. It has never given any indications of the existence of aneurism of the large vessels, but in cases where the application of the hand and even the sight would have furnished much more certain ones."

The results of percussion are besides doubtful when the absence of sound only exists in the right inferior side of the chest. They are often deceitful when the chest is deformed, even to a slight degree, by the effect of rickets; lastly, they are very uncertain, and often inapplicable, when the integuments of the chest are distended with a considerable quantity of fat. The art of percussion, besides, although very simple in appearance, requires long practice, and a dexterity which few men can acquire. The slightest difference in the angle under which the fingers strike the thorax, may lead one to suspect a difference of sound which in reality does not exist. Many physicians are unable to produce this percussion without employing such force as to make the process very painful to sick persons. And a chest, the sound of which has appeared almost dull when struck in a chamber that is small, or filled with furniture, or in a bed surrounded with thick curtains, will appear the day after much more sonorous if the experiment be made in a larger apartment, or in an arm chair.

It is in diseases of the heart especially that a more consistent and certain sign is desirable than that afforded by percussion. Some physicians have in these cases applied the ear to the region of the heart, and some the touch. But these practices are both objectionable, and cannot be brought into gsneral use, even if they were not liable to error on other grounds.

"I was consulted," says M. Laennec, "in 1816, by a young female, who had some general symptoms of a disease of the heart, and in whom the application of the hand and percussion would give unsatisfactory results on account of her embonpoint. The age and sex of the patient forbidding that kind of treatment of which I have just spoken, I brought to my recollection an acoustic phenomenon well known. If the ear be applied to the end of a beam, one hears distinctly the scratch of a pin at the other end. I imagined that one might, perhaps, draw a useful hint in the case in point, from this

property of bodies. I took a sheet of paper and formed a roll of it well secured, of which I applied one end to the region of the præcordia, and placing the ear at the other end, I was as much surprised as gratified in hearing the heart beat more clearly and distinctly than I had ever done by the immediate application of the ear."

With the conviction that this method might become useful in inquiries relative to many other diseases, he commenced a series of experiments at the hospital of Necker, and obtained as the result many new signs adapted to render the diagnosis of almost all the diseases of the lungs, pleura, and heart more certain and circumstantial, according to his ideas, than the chirurgical diagnosis established by means of the sound, or introduction of the finger.

The work is divided into four parts:—

The first contains the impression produced by the organs of voice on the ear applied to the cylinder; the second, those furnished by respiration; the third, those afforded by the *râle* (see the explanation given at page 361); and by way of appendix, the results of his researches in the fluctuation of fluids effused into the cavities of the thorax; the fourth contains the analysis of the heart's pulsations in a state of health and of disease, and the particular symptoms of the diseases of the heart and the aorta.

The author made various experiments with different substances, in order to ascertain what was best adapted for the purpose of his inquiry.

The most dense bodies, as analogy would lead one to suppose, are not the best calculated for forming such experiments. Glass and metals, besides their weight, and the sensation of cold which they occasion, do not communicate so well as bodies less dense the pulsations of the heart, and the sensations which respiration produces. There is a medium, however, to be observed, and of all substances which he tried, bodies of such a density as paper, wood, and cane, are those which appeared to be preferable to all others. He observes, this result is, perhaps, in opposition to a physical axiom, but it appeared to him invariable. He also observes, that an instrument with a small hollow is indispensible for examining the voice, but a full or solid body is the best for discovering the state of the heart.

"I now," says he, "make use of a cylinder of wood, with a hollow tube in the centre, three lines in diameter, and divided in the middle by means of a screw, in order to make it

more portable. One of the extremities is widened to the depth of about an inch and a half in the shape of a funnel. The cylinder so disposed is the instrument best adapted for ascertaining the state of respiration. It may be converted into a simple tube with thick sides, so as to explore the voice and pulsations of the heart, by introducing into the funnel an end-piece of the same kind of wood so as exactly to fill it, and which is fixed by means of a small copper tube passing through it, and entering into the hollow of the sylinder to a certain depth. The instrument is a foot long, and an inch and half in diameter."

In all cases, the cylinder, or stethoscope, as he sometimes calls it, should be held as a pen in writing, and the hand should be placed very near the breast of the patient, that he may be satisfied the instrument is properly applied.

The end of the cylinder intended to be applied to the chest, and the extremity which is formed by the end-piece or cover, ought to be slightly concave. Some of the effects which are obtained by this sort of inquiry are easy to be discovered, and it is sufficient to have once *heard* them, to know them again; such are those indicated by ulcers in the lungs, excessive enlargement of the heart, fistulous communication between the pleura and bronchiæ, &c.

But there are others which require much study and practice; and, as this mode of inquiry carries the precision of diagnosis much farther than others, it is necessary also to bestow more pains, in order that every possible advantage may be derived from it. The author admits that one can scarcely acquire, except in hospitals, complete dexterity in the practice of *mediate auscultation*, insomuch as it is necessary to have confirmed, by actual inspection, the diagnosis established by means of the cylinder, to be sure of one's self and the instrument, to take confidence in one's own observation, and to be convinced by the sight, of the certainty of signs afforded by the sense of hearing. It is generally sufficient to have observed a disease two or three times, to learn to know it again thoroughly; and the greater part of pulmonary affections, and those of the heart are so common, that after having studied them for eight days in an hospital, there will remain scarcely more than a few rare cases, which will almost all be met with in the course of a year, if all the sick be carefully examined.

On Exploration of the Voice in general.—When a healthy man speaks or sings, his voice resounds in the interior of the chest, and produces in the whole extent of the parietes of this

cavity a sort of noise (frémissement) easy to be distinguished by the application of the hand. This phenomenon no longer exists when, the effect of any disease, the lungs have ceased to be pervious to the air, or are found to be separated from the thoracic parietes by a liquid effusion. This sign, however, is of but little importance, as many causes may vary the intensity of the sound, or even entirely destroy it. It is not very perceptible in fat persons, in those whose integuments have a certain flaccidity, nor in those who have a sharp or weak voice. In men of the best conformation it is not very evident, except at the anterior superior part of the chest, upon the ribs, and in the middle of the back. Lastly, this peculiar noise, having, in no case, any great intensity, it is difficult to make comparative examinations with regard to it; and consequently to draw from it results applicable to the diagnosis of pulmonary diseases. As it is not very easily perceived but by applying the whole hand to the chest, one can only conclude when it exists, that a great portion of the lungs is pervious to air; but one cannot precisely determine the point where it is impervious, if it takes place towards the inferior part of the chest, as occurs very frequently in peripneumony.

But in order to complete the series of experiments, the author endeavoured to establish even to what point the cylinder communicates to the ear the sound (le frémissement) of the action of the thoracic *parietes*.

The points where the intensity is greatest are at the armpit, the back, between the internal edge of the shoulder blade and the vertebral column, and the anterior superior part of the chest, towards the angle formed by the union of the sternum with the clavicle. When the cylinder is applied to these points, the voice appears much stronger aud nearer the observer than it does to the naked ear. In the other parts of the chest, on the contrary, especially below and behind, it appears weaker and more distant.

In prosecuting his researches as to the comparative sound of the voice in a number of healthy and diseased subjects, he was struck by a very singular phenomenon. The case in which it occurred was that of a female about twenty-eight years of age, who was attacked with a slight bilious fever, and a recent cough, which presented no other character than those of pulmonary catarrh. On applying the cylinder below the middle of the right clavicle, and directing the patient to speak, her voice seemed to proceed directly from the chest, and to pass entirely through the central canal of the cylinder. This

phenomenon only took place to the extent of about a square inch. Nothing like it was found in any other part of the chest. Not knowing to what this phenomenon was to be attributed, M. Laennec examined, in regard to it, the most part of the patients then in the hospital, and he discovered it in at least twenty of them. Nearly all were consumptive and arrived at an advanced stage of the disorder; in others the existence of tubercles was still doubtful, although there were reasons to fear their presence. But two or three, like the woman who had first exhibited the phenomenon, presented no symptom of this disease, and their embonpoint, as well as the state of their strength, seemed even to remove all fear with regard to it.

From that time, however, he was led to suspect that the phenomenon in question might be owing to those irregular cavities which are produced by the softening of tubercles, and known by the name of pulmonary ulcers. The existence of this phenomenon, in subjects who had no symptoms of phthisis pulmonalis, did not destroy this conjecture; because it often happens that we meet with tubercles, and even ulcers in the lungs, in subjects dead of acute diseases, in whom phthisis has been always latent. The most part of the patients who exhibited this phenomenon having died at the hospital, he was enabled to confirm by actual inspection, what he had so rightly conjectured. In all of them he found cavities more or less large, owing to the softening of the tuberculous matter, and communicating with bronchial ramifications of a variable diameter. He found that *pectoriloquism* (as he named this phenomenon) was by so much the more decided, as the ulcerated cavity was nearer to the surface of the lungs, and that it never was more striking than when, in consequence of this viscus adhering intimately to the costal pleura, the parietes of the thorax formed almost immediately a portion of those of the ulcer—a circumstance which, as is well known, often happens.

He was, therefore, naturally led to think, that pectoriloquism is owing to the stronger and more perceptible sound of the voice, in points where it is re-echoed by a more solid and extended surface. Consequently he presumed that a phenomenon analogous to it should take place, when the cylinder is applied to the larynx and the trachea of a healthy man. His conjecture was found to be correct. There is a perfect identity between pectoriloquism and the voice proceeding from the larynx through the cylinder, and this experiment is even

a very good means of giving an exact idea of pectoriloquism, when one has no such patients at one's disposal.

Consumptive persons forming more than a third of the patients in the hospitals of Paris, numerous facts enabled him to ascertain the varieties in the phenomenon, the practical inductions, and the cases of exception.

Of Pulmonary Consumption, or Tubercular Affection of the Lungs.—The cavities which produce pectoriloquism, are those which are commonly called ulcers in the lungs. They are not, as has been generally thought, and as the generality of practitioners still think, an effect of the inflammation and suppuration of the pulmonary texture. The recent progress of morbid anatomy has clearly demonstrated that these cavities are owing to the softening and consequent evacuation of a peculiar kind of accidental production, to which modern anatomists have given the name of tubercle, a word formerly applied, in general, to every kind of tumour or preternatural protuberance. The existence of tubercles in the lungs is the cause, and constitutes the proper anatomical character of phthisis pulmonalis.

The author here wishes to be understood as treating only of tubercular consumption. He thinks that no other species of pulmonary consumption ought to be admitted, unless nervous phthisis or catarrh, assuming the appearance of tubercular phthisis. All other species are at bottom, he supposes, tubercular consumption, and only differ according to the cause to which we attribute, perhaps gratuitously, the development of tubercles. Tubercular cavities differ essentially from an ulcer in this, that the latter extends itself by corroding the texture in which it is found, whilst the former, being the spontaneous destruction of an accidental production, which has removed and pressed against, but not destroyed the pulmonary texture, have no tendency to enlarge themselves at its expense. Bayle has described the progress of the development of these morbid productions more clearly than any one before his time. M. Laennec, however, with a view to the more complete elucidation of his subject, and to rectify or extend some of M. Bayle's observations, thinks it necessary to give an abridged description of the characters of tubercles and their mode of development. For this able description we must refer our readers to the work itself, and proceed to that part which more immediately treats of the author's new method of inquiry.

The most common seat of these excavations is in the supe-

rior lobes of the lungs: it is in this part that tubercles are usually first developed; consequently it is there that they are most frequently found enlarged and advanced; and for the same reason, the points of the chest where pectoriloquism is most frequently discovered are its anterior superior part, the arm-pit, the space comprised between the clavicle and the trapezius muscle, and the superior and inferior spinous fossæ of the scapula. The thickness of the scapula and its muscles does not hinder the perfection of the phenomenon, although it appears to render the voice less sonorous.

Pectoriloquism is evident or doubtful: it is evident when it presents completely the characters mentioned above. As often as we meet with this phenomenon, even if it be perceptible but for a few moments at a time, we may pronounce with certainty that there exists in that part of the lungs corresponding to the point of the thoracic parietes where the sign is manifested, a preternatural cavity communicating with the bronchiæ. The characteristic phenomenon of pectoriloquism becomes more striking if we stop the free ear with the hand. We then discover, with the strongest evidence, that the voice of the patient and the articulation of his words are transmitted through the cavity of the cylinder.

Pectoriloquism is doubtful, when in applying the cylinder upon a certain point of the chest, the voice of the patient appears a little sharper and slightly feigned, like that of ventriloquists, or that it resounds under the cylinder with more force than it does to the naked ear; without it otherwise appearing to pass through the tube. We may have an exact notion of doubtful pectoriloquism by applying the cylinder between the inner shoulder blade and the vertebral column, towards the points corresponding to the origin of the bronchiæ, on a lean subject with a sharp voice, but otherwise healthy. It naturally exists in persons who unite these conditions, and even more or less in all, for the reasons above stated.—

In thin or emaciated children, whose breasts are straight, the proximity of the bronchiæ affords even sometimes at this part an evident pectoriloquism, although the lungs may be sound. We ought not, for the same reason, to draw unfavourable conclusions in many cases of doubtful pectoriloquism, when it only exists in this point, under the arm-pit, or towards the junction of the sternum and clavicle. We may even extend this proposition to all the anterior superior part of the chest as high as the third rib, when the phenomenon is very

doubtful, and that it exists equally on both sides; for the upper part of the superior lobe of the lungs contains, in a relative proportion, more bronchial ramifications than the other parts of this organ; and their branches, sometimes very superficial, often produce the phenomenon in question, especially when the lungs are adhering to the pleura. But when doubtful pectoriloquism is met with in those parts of the chest situated below the third and fourth rib, or only on one side, and not in the other, it is at least a strong presumption of the existence of a morbid cavity; and, if at the time it does not exist in the other points above mentioned, this equivocal presumption has a complete certainty, and we may safely conclude that the cavity is situated deeply in the pulmonary texture, or that it is still in a great measure filled with tuberculous matter imperfectly softened. In whatsoever point of the chest it may be, when the resounding of the voice is much stronger than on the opposite side, and especially when it is so intense as to appear much nearer the ear of the observer than when he listens with the naked ear, the sign is as certain as if the voice passed evidently through the tube, and pectoriloquism is *imperfect* and not *doubtful.*

Moreover, between the most perfect pectoriloquism and that which is altogether doubtful there are degrees which are easily learned by practice, and which it would be as superfluous as difficult to describe. Thus, for example, the voice seems sometimes to be a little introduced into the extremity of the tube, but not to be capable of passing through it entirely. But the comparison of signs obtained by respiration with those of percussion, enable us to appreciate the importance of imperfect or doubtful pectoriloquism.

Pectoriloquism is so much the more evident as the voice of the patient has a sharper tone. Women and children present it in the most striking manner; and are consequently those on whom we must be most on our guard against that doubtful pectoriloquism which exists naturally in some parts of the chest. In men with a very deep and grave voice, on the contrary, the phenomenon is often imperfect, and sometimes doubtful, even when there are excavations on the lungs in a state best fitted to produce it. The more deep or hollow the voice, and the more strongly it resounds on the interior of the chest; the murmuring (frémissement) of the thoracic parietes, of which we have spoken above, becomes so intense, that it in a great degree masks or covers pectoriloquism. The voice, being too much agitated, and trembling, as it were, seems as

though it could not enter into the tube, and resounds only at its extremity with a strengh and volume often double or triple what it presents to the ear that remains free. It seems, in a word, as if the patient spoke in a speaking trumpet close to the observer, and not as if he spoke to him in the ear by means of a tube. But this phenomenon, though it be less extraordinary than pectoriloquism, is not the less a very characteristic and sufficient sign in practice, especially when it only exists at one side. It may be rendered still more striking, as we have said, by stopping the other ear. The difference in the sound of the voice in the diseased and the other parts of the chest, become then so very great, that the certainty of an ulcerated cavity is as complete as if it were announced by the most perfect pectoriloquism. There cannot exist any doubt on this head, except when the phenomenon is less intense, and is observed equally on both sides of the chest.

When the pulmonary cavities are extremely large, pectoriloquism is changed into a phenomenon analogous to what is observed in men who have not a very low voice, and sometimes even in women whose voice is not very sharp. Thus, when in a consumptive person, evident pectoriloquism comes to be changed into a stronger sound, analogous to the voice transmitted at a distance by a trumpet or paper cone, we may conclude that new tubercles have become softened, and that they have produced cavities opening into the first, and consequently that the disease is gaining ground.

The cylinder widened at its extremity in the shape of a funnel utters pectoriloquism less than the simple cone or tube, and affords nearly equal intensity of sound; for this reason it may sometimes be employed with advantage in subjects with a low and hollow voice. The author remarks, that he applied his ear upon the chest of a consumptive person who afforded the sign of pectoriloquism in the highest degree, and he only obtained the doubtful sign just described, and even with less intensity of sound than when he used the tube, and especially the cylinder, hollowed like a funnel. It is scarcely necessary to say that the full cylinder does not afford pectoriloquism. It produces, with a less intensity of sound, nearly the same effect as the immediate application of the ear. The cone cylinder gives a sensation more resembling the true pectoriloquism, without doubt owing to the multitude of small tubes of which it is composed.

The most evident pectoriloquism may present differences

sufficiently remarkable and independent of the instrument employed. Sometimes the voice passes continually through the cylinder, sometimes the phenomenon is in some degree intermitting. This sort of intermission appears to be caused by the cavities opening into the bronchiæ being obstructed by phlegm or tubercular matter; but the diagnosis is not the less certain. Even perfect and continuous pectoriloquism is sometimes interrupted by this latter cause. Very often, after some hours, or even a few minutes, this phenomenon is not to be discovered in patients who have presented it in the most striking manner. The rattling (râle) which we then hear in the part where pectoriloquism existed, leaves no doubt concerning the cause of its cessation; for this reason, we ought never to pronounce that a phthisical person does not afford this sign, until we have examined him many times, at different hours of the day, and particularly immediately after he has coughed.

It sometimes happened to the author, while examining consumptive persons, in whom pectoriloquism existed in the back, and whose voice was weak, that he heard their answers perfectly by means of the cylinder, whilst at the same distance he could only hear a few interrupted expressions with the naked ear. Several other varieties of this phenomenon are detailed with much minuteness by the author, which every one desirous of perfecting himself in this new art should study diligently.

We have been so far minute, that we may do justice to our author's candour, in himself communicating so freely the difficulties and exceptions which may be urged against the general adoption of the method, by those who may consider it too laborious for common use. In making the experiment with the instrument used in exploration, the author always took care to turn the patient's head on the side opposite to that which he examined.

In more than two hundred consumptive persons, dissection confirmed the accuracy of the prognosis which he had given by the aid of the cylinder; for in all of these he met with ulcerated cavities in the lungs, when he had previously found pectoriloquism in an evident manner; and as in the most part of these subjects he had observed the phenomenon in many points at once, he asserts boldly, that he has many hundred positive observations on this fact, and not one negative. On the other hand, he never found pulmonary excavations communicating with the bronchiæ; in any subject whom he had

carefully examined in a regular manner for a certain number of days without meeting with pectoriloquism. Although the superior lobes of the lungs are the most usual seat of ulcerated cavities, we ought not to be satisfied with only examining the points above alluded to, if pectoriloquism is not found there. It sometimes, though rarely happens, that cavities exist in the centre of the lungs at their anterior, middle or lateral parts, and even towards their inferior edge, the superior lobes being altogether sound.

Two or three times only, cavities, more or less extensive, were found in subjects that gave no evident signs of pectoriloquism: but these cavities were almost entirely filled with softened tuberculous matter, and they only communicated with the bronchiæ by one or two openings situated in the posterior or inferior parts. These, and other similar cases, are no more than exceptions which confirm a general rule; for it is evident, that pectoriloquism cannot take place without the communication of a cavity, partly empty, with the bronchiæ.

From all his preceding remarks, the author concludes that pectoriloquism is a true pathognomonic sign of phthisis pulmonalis, and that it is sometimes indicative of it long before any other could lead us to suspect it. In short, it is the only one that can be regarded as certain.

The following observations are certainly judicious, and confirmed by every day's experience.

Cough, dyspnœa, purulent expectoration, hectic fever, hæmoptysis, marasmus, are sometimes met with in invalids, whom, notwithstanding, and contrary to all expectation, we see restored to health. Some years ago a young female died with all the symptoms of pulmonary consumption. On opening the body the lungs were found entirely sound; but the liver was in the state commonly termed enlarged liver—there was no other organic injury.

On the other hand, we often observe in patients attacked with true tubercular consumption, the absence of almost all the symptoms which usually attend the disease. Sometimes the cough is absolutely wanting, or is interrupted for months; the hectic fever is often scarcely perceivable, and sometimes ceases for very long intervals. Even the emaciation, from which the Greek physicians took the name of the disorder, is sometimes scarcely to be observed, and death may happen by the sole progress of the tubercular affection. Lastly, in many cases, colliquative diarrhœa is the only symptom, and there-

fore necessarily an equivocal one of the disease. M. Laennec states his conviction from a great number of facts, that, in some rare cases, an invalid may be cured after having had tubercles in the lungs, which have been softened and have formed an ulcerated cavity.

To render the preceding observations more clear and intelligible, the author has subjoined a few cases to illustrate the facts which he has detailed.

The first presents the account of two pulmonary ulcers cured or transformed into fistulæ by the *development* of a semi-cartilaginous membrane in a subject who had no more tubercles in the lungs. The second case shows the same disposition in a subject who had only a small number of crude isolated tubercles, and some miliary granulations, which, from their state not being very advanced, and from the vigour of the individual, would not, in all probability, have prevented him from still living to a considerable age. The third is the history of a woman still living and in good health, who, after having exhibited a disease which presented all the symptoms of phthisis pulmonalis, remains, after the cure, a pectiroloquist or one in whom that phenomenon may be discovered.

After considering the facts stated in the preceding cases, the form of pulmonary fistulæ, the smooth appearance and texture of the membrane which lines them, as well as the analogy of those phenomena which fistulæ in general afford, we should be naturally induced to think that the development of the semi-cartilaginous membrane is the last effort which nature is able to make for the cure, after the formation of an ulcerated cavity in the pulmonary texture; and that it is impossible for the parietes or sides of a cavity so lined to be reunited by a true cicatrix. The fourth case appears, however, to prove the contrary. It is that of a semi-cartilaginous fistula of the lungs in part cicatrized, in a subject who had other tubercles in different states of advancement, and another pulmonary fistula that was not cicatrized.

In commenting on this case, the author states, that the anatomical disposition which it indicated, seemed to be evidently the result of the approximation of the sides of an ulcerated cavity lined with a semi-cartilaginous membrane. But the union could not be completed, by reason of a small part of the tuberculous matter still remaining in the cavity. This case is, however, to be regarded as very rare, and is the only one which he ever met with; but he observes, it is not at all uncommon to find in different parts of the lungs, and especially

the top of the superior lobe, a number of partitions or laminæ formed by condensed cellular texture, sometimes mixed with fibro-cartilaginous portions, whose whiteness forms a striking contrast with the texture of the lungs, presenting the appearance of a cicatrix imbedded in this texture.

The fifth case describes an old cellular cicatrix in the lungs of a man who died of a chronic pleurisy and acute peritonitis; and the seventh contains the particulars of an old fibro-cartilaginous cicatrix in the lungs of a man who died of peripneumony.

M. Laennec states, that many observations lead him to think that tubercles of the lungs are not in all cases, a necessary and inevitable cause of death, and that after their *softening* has formed an ulcerated cavity in the interior of the lungs, the cure may take place in two ways—either by the conversion of the ulcer into a fistula lined with a membrane entirely resembling the texture of the sound animal economy—or by a more or less perfect cicatrix, and of a cellular fibro-cartilaginous, or semi-cartilaginous nature.

In alluding to the frequency of such examples of fistulæ and pulmonary cicatrices, the author remarks, "I can assure any one who shall devote himself with assiduity to researches in pathological anatomy in our hospital, that six months will not elapse, without his meeting with very many such cases."

The seventh observation is on a case of pulmonary consumption suspended in its progress, and to all appearance cured; and the eighth is that of a young Englishman cured of tubercular phthisis. The ninth is a case somewhat similar.

M. Laennec has collected some judicious observations on the expectoration of tubercular matter, or vomicæ. These, he thinks are not the usual consequences of peripneumonic inflammation, as many have supposed, but of the gradual development and *softening* of pulmonary tubercles.

His researches into pathological anatomy led him also to discover a state of disease not much noticed by others, viz. dilatation of the bronchiæ.

In the few cases of the disease which occurred to him, and which always arose from chronic catarrh, or whooping-cough, he distinctly observed the phenomenon of pectoriloquism. Dilatation causing an unnatural cavity, he considers as the cause.

The limits within which we are obliged to confine this article will not permit us to follow the author in his remarks on diseases of the heart, which are, however, extremely novel

and ingenious. To many of our readers the long detail we have already given will appear tedious. As we had a new system to describe, we thought it but justice to use as much as possible the author's own words. Such a manner of proceeding detracts, perhaps, from the style, but adds to the practical utility of the article. It is but fair, however, to apprize our readers, that the novelty of the subject, and the variety of interesting matter which M. Laennec has introduced, make it difficult to convey a just idea of the author's experimental labour and acute observation.

Models of the instruments which M. Laennec uses have been brought to London, and we lately saw sets of them at Mr. Weiss's in the Strand. They are of so moderate a price, that it will be in the power of all to convince themselves of the reality of the phenomena observed by Laennec. This has already been done by several individuals, and we feel confident that very important results will, in all probability, be obtained from the experiments and observations now making.

An Essay on Mercury; wherein are presented Formulæ for some Preparations of this Metal, including Practical Remarks on the safest and most effectual Methods of administering them, for the Cure of Liver Complaints, Dropsies, Syphilis, and other formidable Diseases incident to the Human Frame: being the Result of long Experience and diligent Observation. By DAVID DAVIES, M. D. Member of the Royal Colleges of Physicians and Surgeons, London; and Senior Surgeon in St. Peter's Hospital, Bristol, 8vo. London, pp. 35, 1820.

Nam ne agricolam quidem aut gubernatorem disputatione, sed usu fieri.—*Celsus.*"

(Medico Chirurgical Review for March, 1821.)

ALTHOUGH the current of abuse has run strongly against Mercury in the writings of some modern reformers, and although there was some foundation for the reprehension of the abuses of this powerful medicine in the hands of ignorance and rashness; yet, among all sober-minded practitioners, the medicine holds its original rank, and is more depended on, in a great variety of diseases, than any other article of the pharmacopœia. Every attempt, therefore, which is ho-

nestly made and candidly imparted, for the purpose of pointing out the safest mode of administering this valuable remedy, and preserving the constitution from the effect of mismanagement, should be received with thanks by the profession, although no brilliant discovery be made, nor specious theory advanced.

Our author, who is a veteran in the art, and has had thirty or forty years' hospital as well as private practice to confirm or refute preconceived opinions, is convinced, from long observation, "that mercury, introduced cautiously into the system by inunction, more certainly removes disease than by the internal exhibition of it;—also that mercury eradicates diseases more certainly and more safely, when not allowed to pass off by the salivary glands, than when salivation is produced."

"Much as been said and written by theorists on the cure of Syphilis without the aid of Mercury. I feel it therefore an imperious duty to caution the credulous and uninformed against a reliance on the anti-syphilitick power of any other medicine yet discovered. I do not, however, mean to say that the constitution, impaired by disease or by the improper administration of Mercury, may not occasionally derive benefit from the use of other remedies; among which might be named Iron, Sarsaparilla, Bark, Guaiacum, Nitric Acid, and other tonicks." P. viii.

Dr. Davies thinks it must be allowed that, for internal use, the less mercury (quicksilver) be changed by fire, and the less it contains of mineral or vegetable acids (provided it be sufficiently oxydated to produce the proper effects on the constitution,) the better it will be fitted for eradicating diseases. Under this impression, he offers the following formulæ for milder and safer preparations of mercury than those in common use.

CONFECTIO HYDRARGYRI.

"R. Hydrargyri purificati,
Mannæ optimæ,* partes æquales,
Tere Hydrargyrum cum Mannâ donec globuli visum fugerint ut fiat Confectio.

PULVIS HYDRARGYRI.

"R. Confectionis Hydrargyri,
Pulvis Glycyrrhizæ, partes æquales,
Mft. Pulvis signatur Pulvis Hydrargyri.

SOLUTIO HYDRARGYRI.

"R. Confectionis Hydrargyri. grana triginta duo,
Mucillaginis gummi acaciæ, fluiduncium,
Syrupi, fluidrachmas sex,
Aquæ Cinnamomi, fluidrachmas duas,
Signatur solutio Hydrargyri." 8.

* Molasses or treacle may, I think, be advantageously substituted for the manna; as the former does not undergo decomposition.

We have often exhibited the pil. hydrargyri in *draughts*, when a repugnance was expressed against pills, and that without any decomposition of the mass. The above formulæ, therefore, draught and powder, may be useful in practice.

When mercury, in the above mild form, is introduced so as to produce a brackish taste in the mouth, swelling of the gums, with a gentle flow of viscid acrid saliva, then, our anthor thinks the boundary is reached, beyond which the medicine should not be administered, particularly to females and children.

We cannot follow our author into the theory of the *modus operandi* of mercury on the human frame. The subject is involved in great obscurity, and we can only merely mark the phenomena produced, without attempting to explain the *quo modo*, as yet.

Our author prefers the confectio hydrargyri to the officinal pilula hydrargyri of the shops, as agreeing better with the stomach and bowels, and being more uniform in its operation. In functional disorders of the digestive organs, this form is perhaps the best, taken in doses of four to eight grains at night, and a mild purgative the following morning, repeated once or twice a week, and prescribing rhubarb, columba, or carbonate of Iron on the intermediate days, with exercise on horseback in the open air

Dr. Davies lays down a code of instructions for the proper administration of a mercurial course.

We can hardly agree with our author that even "in recent and slight cases of Syphilis," the patients may pursue their accustomed avocations, and keep to their usual diet, while taking mercury. We are convinced, that where mercury is at all necessary, low diet and confinement within doors are highly judicious, if not absolutely necessary restrictions. When patients labour under formidable stages of the disease, our author considers the following regulations to be necessary. 1st, The tepid bath—2d, An aperient combined with a few grains of calomel—3d, Flannel dress —4th. Regulated temperature to about 64°—5th. Diluting drink, and milk diet, with arrow-root or wheaten flour—6. Mercurial frictions carefully, but steadily, pursued till the cure is effected, without inducing violent ptyalism.

"In conclusion," says our author, "an anxiety to serve mankind, and a strong conviction in my mind, deduced from extensive practice, diligent observation, and an experience of forty years, impel me to add that this Confection, combined with Hyoscyamus, Myrrh, or Carbonate of Iron, has by me been found a most valuable remedy in Phthisis Pulmonalis and Scrophula; united with tonicks, purgatives, and diureticks, of excellent use in Dropsies; after local bleeding by Leeches, joined to appropriate remedies, very beneficial in dispersing indurated Tumors in the female breast, the prostate and other indurated glands. Lastly, combined with Tartarized Antimony, or with Antimonial Powder, it forms one of the best febrifuge remedies, suited to almost every case of Pyrexia. 33, 34.

Cases illustrative of the Efficacy of the Hydrocyanic or Prussic Acid in Affections of the Stomach, with a report upon its Powers in Pectoral and other Diseases in which it has been already recommended, and some Facts respecting the Necessity of varying the Doses of Medicines according to Circumstances, and the Use of Opium in Diabetes. By John Elliotson, M. D. &c. &c. One vol. 8vo.—1820.

(Medico-Chirurgical Review for March, 1821.)

The adaption of the various parts of the material world to our use is an admirable illustration of that benevolence which the Supreme Being exercises towards his sensitive and rational creatures. This truth, at all times conspicuous, becomes eminently so in an æra, when the penetrating search of the philosopher is continually developing a salutary tendency in those powers, which are wont to be regarded as the very bane of our nature. A variety of disorders, which seemed almost beyond the reach of medicine, have, within these few years, yielded to the skilful management of the most virulent poisons. And heartily do we congratulate every practitioner of the healing art, that to this class of remedies another is now added, which, we confidently believe, will be found inferior to none that have preceded it.

With the *prussic*, or (as it is now called) the *hydrocyanic** [*]

* The disposition which exists to obscure the science of medicine by the invention of high-sounding names, cannot be too severely reprehended. Even the chemists, whose predilection for hard words is notorious, saw enough of technicality in the title "prussic," to be satisfied. Why, then, should the sons of Æsculapius feel so desirous of a change? Is it (which is their only excuse) that they fancied they had found another term more descriptive of the thing signified? If so—grievously we apprehend have they erred in judgment. For, granting that every one understood the language from which the word is derived, and that no inconvenience would arise from its extraordinary length, (both of which suppositions are inadmissible) even then we deny that the adjective κυανεος, serves so well to denote the exact species of blue resulting from the trifling combination of acid, alkali, and iron, as that epithet, which, by a reference to the very substance itself, must immediately recal the precise idea of colour, if originally excited in the mind.

acid, every chemist must have been long familiar. Its pernicious effects on the animal body were first pointed out in a series of experiments performed by Dr. Madden, about the year 1730.* Soon afterwards, Dr. Browne Langrish instituted a number of trials, with the view of determining the medicinal qualities of this deleterious fluid. Such attempts however proving nugatory, the prussic acid underwent little farther scrutiny, until Doctors Majendie and Granville, about three years ago, again subjected it to the test of medical investigation. Their reports of its use in pectoral complaints were so favourable, as to induce the author of the little volume before us, to have recourse to it in his own practice; and, fortunately for mankind, here it was that the remedy happened, by mistake, to be adminstered to a person labouring under severe dyspepsia. The rapid amendment consequent upon its exhibition, excited a strong suspicion in the mind of Dr. Elliotson, that so striking a change had resulted from the employment of the acid. He resolved, therefore, on ascertaining the truth of this conjecture, by trying it on an extensive scale. An accumulation of *very valuable facts*, decisive of the accuracy of such an opinion, was the consequence. These form the bases of Dr. E's essay. They are divided into sets. The first set, comprising seventeen cases, is intended to illustrate the power of the acid over that affection of the stomach, which is indicated by *pain and tenderness in the epigastrium simply*. Ten of the persons thus afflicted were females. Generally, they had attained to the middle, or rather the advanced periods of life; and the duration of their complaints varied from a few weeks or months, to as many years. But, notwithstanding its almost inveteracy, it gave way to the use of the acid. In the majority of instances, indeed, the cure was effected in a few days or weeks; in none was it protracted so long as two months. We pass on then to the second set, in which we are presented with ten cases of pain and tenderness, accompanied by usual symptoms of *dyspepsia*, *as flatulence*, *vertigo*, *head-ache*, *loss of appetite*, *nausea*, *vomiting*, *debility*, *nervousness*, *cough and dyspnæa*. Here, also, the acid proved equally successful, although the complaint had existed months, and in some instances, even years. The control, in short, it manifested over

* These experiments were indeed performed with *laurel water*; but, as no doubt is now entertained of the identity of its active ingredient with Prussic acid, they have been adverted to as fair illustrations of the virtues of the latter fluid.

these multifarious symptoms, would alone afford a sufficient demonstration of its extraordinary influence in stomach derangements. But, satisfactory as must be this conclusion to every unprejudiced mind, it will receive yet further confirmation from the five cases included in Dr. E's third division. These were examples, differing in no respect from those just mentioned, except in their greater degree of severity, and in being marked by an additional symptom, (viz.) *the pyrosis or watery secretion of the stomach.* No one can be ignorant how apt is this obstinate species of indigestion to baffle the endeavours of the most skilful. But, even here, our remedy did not fail: for in three of the five cases specified, it soon effected a perfect cure; and, so remarkable was the improvement in the remaining two, that, had the medicine been duly persisted in, complete success would, doubtless, have followed.

Instances of dyspepsia, characterized by the frequent *recurrence of vomiting*, are by no means uncommon. To elucidate the efficacy of the acid over this modification of the disorder, eight cases are succinctly given, which, though of considerable standing, were all, in no long time, removed.

In the very brief analysis we here attempt of Dr. E's treatise, it is incumbent on us not to overlook *a circumstance*, which might be considered as affecting the validity of his conclusions. On a few occasions, he prescribed (he informs us) *a gentle laxative* in conjunction with the acid. Is it possible, therefore, the good ascribed by him to this latter remedy might, with greater justice, have been attributed to its concomitant. Anticipating however this objection, the Doctor has obviated it by the introduction of five other cases, which constitute his fourth division. In the first of these the patient progressively recovered, his bowels being, all along, in a constipated condition; in the second, scarcely any amendment took place for a considerale time, though they were kept relaxed by appropriate medicines; in the third, fourth, and fifth cases, complete restoration ensued notwithstanding the most obstinate costiveness. Hence, then, it is obvious, that the particular state of the intestinal canal possesses very little influence, either in promoting or retarding the salutary operation of our remedy on the stomach. At any rate, its power of restoring the healthy functions of this organ, does not appear to be diminshed by the *existence of fæcal accumulations.* With what shadow of probability, then, can the sanative process in question be ascribed to the

laxatives? These reflections bring us to Dr. E's sixth and last division, which, although it include only four cases, is, we apprehend, one of no ordinary importance. It states the efficiency of the acid, in that formidable species of dyspepsy, which often *counterfeits diseases of the heart.* So exactly do the more prominent features of these opposite affections correspond, that we confess it has occured to us, to mistake the one disease for the other. The vehement and rapid pulsation in many instances of stomach ailments, accompanied, as it often is, by acute pains darting from the sternum and left breast, down the spine and left arm, together with the benumbed sensation of this member, and the hurry and dejection expressed in the countenance, are calculated to mislead even the most wary. But, in the prussic acid, we have an excellent method of discrimination; for, should they appear altogether beyond its control, they may fairly be presumed to be connected with some structural derangement of the circulating organ.

Such, then, is Dr. E's experience with regard to the virtues of this remedy in *functional disorders of the stomach.* Highly extolled as it has been in a variety of pectoral complaints, it did not, in the hands of our author, appear to deserve the encomiums it has received. He found it, indeed, serviceable in simple dry cough, and the spasmomic asthma; but in pneumonia and hooping cough, it seemed altogether useless. In phthisis it produced a slightly soothing effect, and that only occasionally. In hæmorrhages, in palpitations of the heart from organic derangements, and in all other disorders where it is desirable to diminish the force of the blood's motion, our author apprehends the prussic acid will prove of little avail. Several hysteric, epileptic, and maniacal patients, took it without the smallest benefit: but it presently wrought a cure in the only case of chorea, to which it was applied. In rheumatism it proved totally inert, but there is some ground for supposing it possessed of anthelmintic qualities. In the proportion of one or two drachms to a pint of water, it has appeared to allay the irritation of the prurigo pudendi and some other cutaneous affections.

From this description of its virtues, we proceed, briefly, to notice our author's *method of exhibiting* so potent a remedy. With persons of adult age, he generally began its administration in doses of a single minim, thrice repeated in the course of twenty-fours hours; and, provided neither nausea nor giddiness (which are its first sensible effects) nor other inconvenience ensued, he gradually augmented the quanity

to two, three, and even to six minims. "Almost any adult (observes Dr. E) will bear one or two minims; few more than five; three are generally borne and required, and very frequently four. One woman took xvii minims three times a day without incovenience or benefit: xviii brought on vomiting and giddiness." To the youngest infant may be given a quarter of a minim, (i. e.) half a drop, one minim being nearly two drops. An over-dose will produce vomitting, pain and tightness at the stomach, with fainting; and if the quantity be immoderately large, convulsions and death. The only instance of its fatal effects on the human subject, with which we are acquainted, is recorded in the very interesting trial of Captain Donellan, for the murder of Sir Theodosius Boughton. The body of this unfortunate gentleman had passed too far into a state of putrefaction, to admit of any accurate anatomical deductions. But the effects of laurel water on the inferior orders of animals, as detailed by several physicians produced at that trial, are worthy of an attentive perusal. In some of their experiments, death instantly took place; and, in all, so speedily, as to render the supposition of its being the consequence of previous inflammation in the stomach wholly inadmissible; whilst, on the other hand, the frightful convulsions which this poison, in adequate doses, never failed to excite, clearly prove that its operation is, primarily and principally, on the nervous system. This supposition will go a good way towards explaining the modus operandi of the prussic acid, in severe dyspeptic cases. No sooner is it swallowed, than the pain accompanying such states often ceases. From this moment the vitiated secretions shew evident signs of amendment, and go on progressively improving, until they are, at length, subdued. Now, as the formation of healthy gastric juices evidently depends on *a regular transmission of nervous influence into the secerning organ*, it may fairly be presumed, that any *deviation* from such *supply* would cause this depravation. If, then, our remedy be supposed to possess the power of correcting all irregularities in the distribution of this subtle fluid upon the stomachic nerves; or in other words, of restoring the balance of excitability at this part, we might conclude, *a priori*, that its operation would be speedy and its effects just what observation teaches us. Quitting however speculation, we are anxious to fix the minds of our readers upon considerations of much greater importance—actual facts.

Unlike many other powerful agents in medicine, the prussic acid may be taken for an indefinite period, without incurring the hazard of an accumulated operation. But, it must be at the same time admitted, that there are constitutions with which it does not seem to agree. The inconvenience, however, in such cases, is only temporary, and by no means of a serious nature. Upon the bowels, it has a slightly constipating effect, and, occasionally, it augments the discharge of urine. It will be borne in the middle and after parts of the day better than at first rising; and, should any feeling of coldness exist in the stomach, it may be advantageously combined with aromatic and bitter infusions.

As the process usually adopted in the preparation of our remedy involves much chemical skill, it will sometimes fall to the lot of practitioners to use a spurious and ineffectual sort. This precaution is the more necessary, as such accident must materially tend to the discredit of a medicine, which, when genuine, will be found to be of great value. We deem it therefore, incumbent on us, to point out to our readers those indications which, in our opinion, are decisve of its purity.* The fluid should be colourless and perfectly transparent, powerfully emitting the odour, and leaving on the tongue the flavour of bitter almonds. Having been at considerable pains to determine its specific gravity, we can safely assert that at the temperature of 60°, it is to that of distilled water at the same temperature, as .9931 is to 1. Should the liquor appear turbid or deposit any sediment, its genuineness may be suspected. This change diminishes its activity and is, in all probability, produced by the absorption of oxygen, which converts it from a ternary compound (consisting of hydrogen, carbon, and azote) to a quaternary, which is composed of these elements with the oxygen superadded. We have only further to remark on this topic, that, as the active principle of which we here speak is a gazeous vapour, held in solution by water, easily decomposed by light and driven off by heat, it must be kept in a dark and cool situation. The method best adapted for general purposes is an earthen-ware vessel, filled with water, and covered over.

Thus much with regard to the prussic acid. We now proceed to notice the *two remaining sections* of Dr. E's volume. The former of these consists of a few cases illustra-

* At the recommendation of Dr. E. we obtained the medicine at Mr. Garden's the Operative Chemist, 372, Oxford Street.

tive of that power, with which the body, in certain morbid conditions, *resists the ordinary influence of remedies.* And, although we are fully sensible of the value of such instances in a pathological point of view, yet we cannot but regard the extreme minuteness with which they are detailed, as quite unnecessary for all practical uses.

The first was a case of spasmodic dyspnœa, in which the paroxysms, though recurring almost daily, were regularly subdued, and at length permanently removed by prodigious doses of opium. Only sixty drops of the tincture were at first adminstered, but this proportion, in four days, was increased to ʒvi, and in eight, to ℥j, with no other effect than that of giving the patient some comfortable sleep.

The second case, was an instance of *insanity*, accompanied by great heat and throbbing of the head, and obvious disorder of the chylopoietic viscera. It was treated with *calomel*, at first, *in eight grain doses*, but afterwards *in doses of ʒiss.* In six months *nine ounces* of this potent mineral were actually administered, and that too without originating any other inconvenience, than ordinarily ensues from the regular and moderate use of it; and, although it did not ultimately eradicate the disorder, the proofs of its controlling power were always manifest;

Dr. E. next presents us with five instances of the admissibility of enormous doses of pulvis antimonialis in hemiplegic, convulsive, and other nervous disorders. By some of these individuals, *sixty*, *seventy*, *and even eighty grains*, were taken thrice in the course of twenty-four hours, for several successive days, *unattended by any unpleasant symptom*, *save a slight nausea*, *or*, *occasionally*, *a gentle disposition to vomit.* By this extraordinary fact, Dr. E. thinks the long litigated point, as to the identity of the pulv. antimon. with James's powder, might be decided. For, should a similar administration of the latter substance act with violence in similar cases, this circumstance, he apprehends, would at once prove the diversity of their nature.*

* We are probably much in the dark yet respecting the *extent* to which medicine may be carried with perfect safety. In Italy, where pathology and therapeutics are now cultivated with unequalled zeal, the sulphas ferri is given, with great success, in dropsical affections connected with, or dependent on, inflammatory affections of the serous membranes, and that in doses which we would scarcely credit. They begin with five grains twice or thrice a day, and increase it to one or two drachms for a dose. Instead of augmenting febrile symptoms, it lowers the pulse, increases the urine, and all the secretions and excretions, thus removing the dropsy, and improving the constitution, at the same time. *Ed.*

The only remaining section of Dr. E's work relates to a very interesting subject, (viz.) *the efficacy of opium in the diabetes mellitus.* This important fact, though obscurely hinted at by some preceding writers, was first distinctly noticed by that eminent practitioner, Dr. Darwin. To his testimony of the advantage of such a method, are subsequently added those of Drs. Ferriar and Warren, and Mr. Money, a surgeon at Northampton, now of London. But, to our author it is that we are indebted for any thing like a statistical and satisfactory account of its effects in this disorder. From his statements it is manifest, that the free use of opiates is not only capable of *restraining the enormous secretion* of fluid which takes place in diabetes, but, also, of *divesting it of that saccharine principle*, with which it abounds; and of ultimately restoring it to a condition, in every respect, natural. To effect this desirable purpose, however, it was necessary to administer the medicine in prodigious doses. Sometimes ℈i, at others ʒss, and in one of the detailed cases, not less than ℈ii of solid opium were actually given three times a day, for upwards of a fortnight. At the recital of these facts some of our readers may perchance be a little startled, but to ourselves, who have repeatedly had occasion to witness the extreme apathy of diabetic patients, both mental and bodily, they are not at all surprising.

It is the remark of certain practical writers, that diabetes mellitus is *always* preceded by a state of urine differing from the healthy, only in respect of quantity. It happening to our author, therefore, to meet with such cases of *increased secretion*, he regarded them as the preludes of that disorder; and accordingly treated them with opiate medicines, to which they readily yielded. It appeared also from the analysis of that able chemist, Dr. Prout, that the urine, in these cases, contained by far too great a proportion of urea. Such considerations, corroborated as they are by the near resemblance of this substance to the saccharine principle, led Dr. E. to the supposition, that the sweetness of diabetic urine is simply the effect of a depravation of its chief saline constituent, the urea. The precise nature of the change, it would be difficult perhaps to determine; but, as the addition of azotic gas to the elements of which this singular substance is composed, is known to give sugar, the Doctor throws out this merely as a conjecture, whose reasonableness, indeed, appears to us yet further confirmed by the reflection, that in the process of secretion there is ground to believe, that the circulating

mass is resolved, by the various organs of the body, into its elementary parts; and by them again so combined, as to form the different secreted fluids.

Such, then, is the brief outline of Dr. E's publication, which, though ushered into the world in an humble form, and with a diffidence which ever accompanies true merit, will be found to be a valuable addition to our medical literature. Candour, talent for observation, and accuracy of discrimination, are conspicuous in the work throughout; and what he has advanced on the subject of prussic acid, we have ourselves, in the main, *confirmed and verified* by a pretty extensive scale of experiments.* The first proof we had of its efficacy, (which was indeed the first trial we gave it) was in a case of severe dyspepsy, which had for three months resisted the combined influence of alterative and bitter tonics, and was accompanied by a most violent and continual palpitation of the heart. The instantaneous relief it afforded, at once astonished and delighted us. The pain in the epigastrium ceased, and the troublesome symptoms rapidly declined until they had all (including the alarming action of the heart) in the space of a week, entirely disappeared. And, to pass over many other instances equally convincing, we would for a moment, direct our reader's attention to the case of a poor man, who had for some years past, at distant intervals, been subject to *convulsive attacks*. He had had three fits the day he visited us, and was actually seized again in our presence. It remained upon him about ten minutes, during which time the arms were agitated upwards and downwards incessantly, the head drawn towards one side, and the muscles of the face violently distorted. He informed us, a painful distension of the epigastrium always warned him of their approach; and that he, almost constantly, experienced a degree of soreness and fluttering at that part. Thus directed to the stomach as the "fons et origo" of his affliction, we prescribed for him the acid three times a day in minim doses. Immediately after the first dose (which was administered without delay) the epigasrium was relieved, and, although a month has now elapsed since we first saw him, the fits have never recurred. For ten days past he has been occupied in his usual employment, and with the exception of a slight uneasiness, once or twice, transiently felt at the stomach, he has remained entirely free from complaint.

* The Editor entrusted the review of this work to a physician in the country, whose public practice at a charitable institution, and private experience qualified him to report practically and usefully on the publication.

These considerations, together with our own experience of its inutility, in inflammatory and structural affections, will not suffer us to withhold from Dr. E. the merit of having ascertained and defined, by a chain of judicious experiments, the more important medicinal qualities of the prussic acid. The forcible manner in which he has demonstrated its operation to be, specifically, on the stomach, has, indeed, suggested to us an application of the remedy, which our author does not seem to have contemplated. We allude to its use in those painful disorders, gout, gravel, and diabetes, which the best modern writers agree in ascribing to derangements in the digestive functions. In a severe calculous case which recently came under our care, it was given with the decided effect of allaying both vomiting and pain; and we have sanguine hopes its efficacy may also extend to those other "opprobria medicinæ," at which we have just hinted. At any rate we are resolved on omitting no fair opportunity of determining this point, and we trust our brethren in the profession will deem the subject of sufficient interest to institute similar inquiries. From such an investigation much important knowledge, we are pursuaded, would result. Perhaps it would disclose to us new paths of research. But, whilst we augur thus favourably, let it not be imagined that we belong to that class of visionaries who, on the discovery of any valuable medicine, never rest until they have ruined its reputation by proclaiming it a panacea. We are of opinion, that the prussic acid will be found possessed of little efficacy except where the stomach is concerned. Many instances of dyspepsia, which spring from depraved hepatic or other chylopoietic, secretions, we are aware, will never yield to it. But, whenever the disorder consists in, originates from, or is connected with, derangements in the *gastric functions*, (excepting however those cases in which the structure also of the organ has become morbid) then will the remedy evince its amazing powers. How ample, therefore, the sphere of its operation!

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(From the Medico-Chirurgical Review for December, 1820.)

The desire of *communicating* knowledge appears to be as strongly and instinctively implanted in the human mind,

from the earliest infancy, as that of *acquiring* the same. We see the child fly to its parents or companions to impart the newly-acquired idea or information; and in every stage of existence, from the cradle to the grave, we find that nothing but avarice, fear, or some base passion, can prevent man from freely communicating to others, what may have cost himself years of laborious study or research to ascertain. This is certainly no unfavourable trait in the human character; and in no class or profession is it more conspicuous than in the practitioners of medicine, where, at the same time, the most powerful temptations and inducements exist to deface it. The formation of societies, and the publication of transactions, through the medium of which, each individual may contribute that which has most attracted his attention or occupied his thoughts, are of incalculable service to the general progress of the healing art. They prevent the unnecessary multiplication of books, by giving an easy vent to facts, observations, or essays, which might otherwise expand into separate volumes, without any increase of solid materials; while at the same time, they rescue from oblivion, or the narrow circle of individual possession, many valuable facts and suggestions which, but for these accessible vehicles of record, would inevitably perish. Volumes of this kind must necessarily be very unequal in themselves, since chance and a thousand fortuitous circumstances operate on the nature, as well as on the current of the communications that compose them. Nothing then, in our opinion, can be more unfair than to estimate the general character of a work of this description by the insulated articles of a single volume—and still less justifiable is it to measure a contributor's genius, talent, or information by the importance or magnitude of a detached paper that is but little calculated to afford any criterion, pro or con, of a man's abilitiy, judgment, or experience. Such, however, is by no means an unusual practice in this athenian age of colloquial criticism, where we exercise the noble liberty of speech and press with unbounded latitude.

A volume issuing from the Royal College of Physicians, the highest constituted body in the profession, endowed with chartered powers, high privileges, and distinguished rank, offers a prominent object for the eulogies of friends, and the aspersions of enemies, besides affording a prolific topic of criticism for the gossips and small wits of the profession. It is not, however, for the zealous and unbiassed cultivator of medical science, or the humble inquirer after truth, where-

ever that may be found, to mingle party spirit with his pursuits, or suffer the distorting medium of prejudice to come between him and the objects of his research.* On this account, we shall adhere, with more than usual rigour, to the analytical line of our policy, conscious that, under existing circumstances, our criticisms would, by one party, be considered *presumption*—our commendations, by the other, *adulation*. In laying an impartial portrait of each article before the reader, however, we shall occasionally hazard a practical remark or observation, which we trust will be received in the same spirit of candour with which it is delivered. "Interea vero, quicquid falsi vel incerti eidem insit, si artem medicam promovere cupimus, firmoque et perenni fundamento stabilire, refellere et corrigire decet, probe memores, sapientiam esse primam, stultitia caruisse.' †

The volume before us contains sixteen articles, and we shall take them in the order in which they stand.

History of a Case of Strangulated Hernia, successfully treated by the application of ice, after the attempt at reduction by the taxis had failed. By G. D. Yeats, M. D. F. R. S. Fellow of the Royal College of Physicians, &c.

The great danger to be apprehended from the incarceration of a portion of intestine or other internal part, is inflammation and its consequences. The *obstruction* to the fæcal passage is quite a subordinate consideration, excepting as it may increase the inflammation. Cold has a great effect in restraining this inflammatory tendency, and not only by constringing the vessels, but depressing the nervous excitement of the parts. It is therefore very generally employed in aid of the taxis by our best surgeons. The case related by Dr. Yeats was a young man, ætat. 18, who was seized with sickness, vomiting, and great pain in the right groin and back, on the morning of the 16th March, 1807. Dr. Y. saw him

* In truth, we conceive that the character of the college, as a body, is no more concerned in the character of a volume of the transactions published under its auspices, than our own character is involved in that of the works which we happen to analyse for our journal. If a council of the college superintend the publication, and if that council admit bad papers and reject good ones, then the judgment or impartiality of the council may be impugned. In no other way, we imagine, can the college be concerned in the work.

† Gregory's Conspectus.

in two hours after, and found a considerable swelling in the groin, protruding into the scrotum, "produced by a strangulated hernia of the congenital kind." It was extremely painful to the touch, and very tense, with great soreness over the abdomen. The countenance was pale and sunk, the pulse 100, full and hard, with thirst and restlessness. Twelve ounces of blood were taken from the arm; twelve leeches were applied to the tumour, and the bites encouraged to bleed by fomentations. By these means he obtained great relief. Five grains of calomel and one of opium were exhibited, and one grain of the former directed to be given every hour afterwards. When the flow of blood by the leeches had ceased, pounded ice was applied to the tumour, and in the afternoon a clyster was administered, which brought away some fæces. "The pain was by this time mitigated, and the inflammation and tumour were certainly less, so that he could lie horizontally with comfort." Mr. Macklin, state surgeon to the Lord Lieutenant of Ireland, was now called in, and attempted the reduction of the hernia, but without success. A grain of opium was directed at bed time, and the calomel and ice to be continued as before. On the following morning the pulse was calmer, and the countenance improved. The tumour also was diminished in bulk, and the abdominal tension almost entirely gone. The same remedies were continued, and a purgative clyster ordered. "In the evening the clyster had produced a feculent evacuation, and by bed-time the hernia had returned into the abdomen with the testicle also." The testicle descended the following day; and as soon as the hernia was decarcerated, two or three spontaneous feculent evacuations took place.

Dr. Yeats makes several practical remarks on the utility, abuse, and action of cold, in strangulated hernia, which deserve the surgeon's attention. He properly disapproves of purgatives given by the mouth, before the obstruction is beginning to yield, and even then they are seldom necessary. "The administration, however, of laxative clysters is obviously required." They should not, Dr. Yeats thinks, be made with acrid ingredients. He directs the submuriate of mercury in small doses of a grain, frequently repeated, "with a view to its relaxant effect, which it powerfully exerts when it affects the constitution." We shall conclude with the following extract from this intelligent physician:

"I may here mention, although I cannot now urge the reasons in detail, that I have almost uniformly found the combined exhibition of submuriate of mercury and

opium, one of the best means of arresting the progress of inflammation, especially under circumstances when that morbid condition continues after repeated general bleeding, and when it seems to bid defiance to all you can do, by lessening the general momentum of the blood. In ileus, acute rheumatism, pleurisy, and all purely inflammatory diseases, this combination, not omitting, of course, depletion, has pretty faithfully served me." P. 15.

Some Observations upon Paraplegia in Adults. By MATTHEW BAILLIE, M. D. F. R. S. L. and E. Fellow of the Royal College of Physicians, &c. &c.

THERE is not a more difficult point in pathology and practice, than that of ascertaining the actual seat or cause of disease. An irritation in one part will cause pain or some morbid phenomenon in a distant part, and these deceptious manifestations are not obedient to any hitherto ascertained law of the animal economy. An irritating body or secretion in the digestive organs will, in ten different individuals, exhibit ten different effects, in kind as well as situation. We have, at present, no law by which we can accurately trace the chain of causation; and therefore our great business is, to collect facts and observations, as a basis for future medical legislation.

The experience and knowledge of a man, in our profession, are generally in an inverse ratio to the boldness of his conclusions, the absoluteness of his dogmata, and the positiveness of his assumptions. The personal conduct and public writings of Dr. Baillie afford an excellent commentary and illustration of this text. Cautious in his practice, guarded in his prognosis, candid in his opinions, and, what is more estimable than all—charitable towards the failings and discrepancies of his brethren, this veteran physician offers an example for the humble to admire, and the proud to imitate. We know that in stating these sentiments, we but re-echo the general voice of the profession; yet we deem it our duty to do so, (not from any private feeling, for we owe Dr. Baillie nothing but the homage of our public esteem) because we believe that moral worth, in the higher ranks of the profession, conduces not less to the vital interests of that profession than splendid attainments. The cry for reform has been long and loud in medical society; but we apprehend that the great subject for reformation is our own conduct towards each other. This work must begin at home. When we determine to do

strictly unto our brethren as we would be done to by them, harmony and unanimity will prevail, and the science will rise in public estimation. This is the line of conduct which a Baillie *has* pursued; and it is that which every member of the profession *may* pursue.

Our experienced author conceives that paraplegia has "increased considerably in this country within the last fifteen or twenty years," for which he is unable to assign a satisfactory reason. The paraplegia of adults, Dr. Baillie observes, has been considered by most medical men as being produced by some disease, "either in the bones or ligaments of the spine, or in the cavity of the spine, most commonly at the loins, independently of any disease in the brain."

"In adults, however, where there has been no accident affecting the spine by outward violence, paraplegia, I believe, depends most commonly, in a great measure, upon a disease affecting the brain itself." P. 17.

Dr. Baillie is joined in this opinion by Sir Henry Halford, Sir James Earle, Mr. Copeland, and some others of his friends. We conceive that our continental brethren have taken a pretty similar view of the pathology of this distressing disease. They consider it to result from something which interrupts the nervous energy from flowing along the spinal cord to the nerves of the lower extremities.

"Il en resulte que les mêmes causes qui produisent la paralysie en général, sont susceptibles de donner lieu à la hémiplégie elle-même."*

We need not state that the general causes of hemiplegia are pressure on the brain. In the paraplegia of adults Dr. Baillie observes that we can rarely detect any external mark of disease in the lumbar region of the spine, although thickening of the theca vertebralis, serous effusions, or other organic changes may, and no doubt do, occasionally, take place. Still he thinks that these causes less frequently produce the disease than has been imagined, and that pressure on the brain is the more usual agent.

"In such cases the diseased condition of the brain may immediately affect a portion of the spinal marrow, and its nerves, in the same manner as it affects the nerves of a lower limb in hemiplegia; or if there be effusion of serum between the membranes of the brain, which is a very common occurrence, a portion of the serum may fall into the theca vertebralis, and press upon the lower part of the spinal marrow.† 19.

* Dict. de Sciences Med. Vol. 39, p. 277.

† The French include in the etiology of paraplegia, irritation of the spinal marrow, whether idiopathic or resulting from gouty or rheumatic metastasis; also its sympathetic affections produced by derangement in the stomach and bowels—a very common cause say they.

Paraplegia occurs most commonly at and after the middle period of life, and oftener in men then in females. Some affection of the head usually precedes and accompanies the disease, as pain, giddiness, drowsiness, impaired vision, defective memory. Occasionally there is numbness, or other indication of approaching paralysis in the upper extremities without any appearance of disease in the cervical part of the spine. The paraplegia creeps on with, at first, a stiffness or awkwardness in the motions of the limbs, increasing to a want of power to preserve the due balance of the body without the assistance of a stick. As the disease advances the stream of urine becomes more and more feeble, and at length passes away involuntarily. The bowels are generally costive, and at length, from a want of power in the sphincter muscles of the anus, the fæces are evacuated unrestrained by the will. Patients in this state sometimes live for years; but more commonly the symptoms increase gradually, and the constitution becomes exhausted. In a few instances recovery takes place.

In one of the most strongly marked cases which Dr. B. had ever seen, the bones of the scull, more especially at the sutures, were more vascular than usual; the dura mater was natural; the vessels of the pia mater were very much loaded with blood, and there were effusions of serum between the different membranes of the brain on both sides of it. The tunica arachnoides was opaque and much thickened; the substance of the cerebrum was considerably softer than natural. About four ounces of water were found in the lateral ventricles of the brain, and a considerable quantity of water was discharged from within the theca of the spinal marrow.

Dr. Baillie thinks it not improbable that, in those cases of paraplegia in which the brain is diseased, the morbid affection extends to both hemispheres.

In respect to treatment, our author found those means most successful which were directed to relieve the head, viz. cupping the nape of the neck, leeches to the temples, blisters to the nape of the neck, setons, &c.

"The internal remedies which I have used with most advantage are calomel, or the pilula hydrargyri, combined with squills, together with purgative medicines. A grain of calomel, or five grains of the pilula hydrargyri with one grain of dried squills, have been directed to be taken every night for many weeks. The purgative medicines have consisted chiefly of neutral salts, and sometimes of pills composed of the extractum colocynthidis compositum, with an addition of jalap." 25

In a few instances advantage was derived from friction of the lower extremities with the hand, for an hour twice a day.

In one case electric sparks drawn from the lower limbs produced much benefit. In those cases where the paraplegia evidently depends on disease of the bones or ligaments of the spine, the foregoing treatment, of course, does not apply. Where lead is the cause, the Bath waters have been found peculiarly serviceable.

M. Chamberet, who has written an article on paraplegia, in the Dictionnaire des Sciences Médicales, very properly observes that the farrago of heating and stimulating remedies used formerly in paralysis, must have done much mischief. He recommends cupping and leeching the spine, while counter irritation is kept up at a distance, to draw the irritation from the brain and spinal marrow. In the mean time, as many cases are purely symptomatic of gastric and other derangements of the abdominal viscera, he judiciously directs the attention of the physician to the remote source of the malady, rather than to its apparent seat. These observations coincide with, and corroborate the opinions of our own illustrious pathologist, as delineated in this analysis of his paper.

Observations Médicales. Par Jos. Rom. Louis Kerkhoffs M. D. &c. &c.

The first of these observations, is a memoir and some cases, of plica polonica, which, however, we shall not stop to analyse, as it is a subject but little interesting to the British practitioner, and our principle is invariably to select what is *most* useful. We may remark, *en passant*, that our author comes to the conclusion that the disease in question is entirely owing to want of cleanliness, together with the habit of wearing the hair long and constantly covered, so common among the lower classes of the Polonese. This opinion is contrary to that of the best Polish Physicians. We shall therefore leave the doctors to settle the dispute. The second section is on the subject of willow bark in "phthisie muqueuse." This we have touched on in our electic article in the present number of the journal. The third section is written in Latin, and contains the case of a soldier poisoned by the acetate of lead. The quantity taken, and the time of taking the poison, are not stated. The symptoms were constipation, anorexy, great lassitude and debility, distention of the abdomen, fol-

lowed by retraction of the same, sense of soffocation, nausea, convulsions, cold sweats, trismus. The stomach was found inflamed, and some portions of the mucous membrane macerated, especially about the pylorus. Spots of inflammation were also observed in the œsophagus, duodenum, transverse arch of the colon, pancreas, mesentery, liver, &c. About six ounces of a dark-coloured liquor were found in the stomach, which, on chemical examination, was found to contain acetate of lead.

In the 4th section is an opinion respecting the origin and prevention of hospital gangrene. Our author is convinced that it owes its existence to the same morbific miasm which occasions putrid fevers, and that it is to be prevented by scrupulous attention to cleanliness in the beds, &c. of the wounded, and free ventilation

The 5th section or observation is on scabies, which Dr. K. has long been in the habit of curing by a solution of muriate of soda two ounces, in a quart of infusion of arnica montana, which is prepared by pouring two pints of boiling water on four ounces of the flowers or roots of arnica. With this liquid the affected parts are to be washed three or four times a day.

In the 6th section Dr. K. strongly recommends fomentations of hot water containing carbonate of potash, in cases of whitlow, especially when suppuration has evidently commenced, and the proper incision has been made. We do not consider the addition of the alkali as of any great importance.

The latinity of these articles has been objected to by some of our classical friends. To us the language has clearly conveyed the author's meaning, and beyond this we do not look, in the simple narration of facts or observations.

Description of an unusual appearance in the Viscera of an Infant, &c. By Henry James Cholmeley, M. D. Fellow of the Royal College of Physicians, &c.

The infant was observed to be very sallow on the day after birth, which appearance daily increased till it became completely icteric. The meconium was scanty, but of the usual appearance. An emetic brought away some dark green bile, and the yellowness of the eyes and the skin diminished.

The stools continued white and pasty, the urine of a deep hue. At the end of five weeks, during which the jaundice continued, an attack of convulsions terminated the child's existence. The infant took the breast freely while it lived; but vomited up what it took. The bowels were seldom moved without medicine. On dissection, the liver was found of a natural size, but of a green hue throughout its substance. The gall bladder was totally wanting, there being only a narrow impervious cord in its place, with a small knot at each extremity. The pancreas was enlarged and indurated, so as to obstruct the egress of bile from the liver to the duodenum by the ductus communis choledochus. This circumstance prevents our gathering any thing from the case relative to the use of the cystic bile; since all the Phenomena recorded might readily be attributable to the interrupted course of the bile generally into the intestines. The case clearly shews, however, the importance of the biliary secretion, and the effects of its obstruction.

Remarks upon the Effects of a Warm Climate in Pulmonary Consumption, and some other Diseases. By H. W. CARTER, M. B.

Dr. Carter's observations on this subject, are very congenial with those lately promulgated by Dr. Clark of Rome, whose work we reviewed in the 8th number of our quarterly series.

Dr. Carter thinks, and with reason, that persons labouring under pulmonary affections are too indiscriminately advised to a warm climate. They are often sent out when their complaints are hopeless, to pine and die in a foreign land! On the other hand, "the very first appearance of affection of the lungs, should be attended to; and, provided there be any predisposition to consumption in the patient, and his circumstances be such as to render a journey to the South practicable, a mild climate should be recommended without delay;" Our author properly observes that it is much better that the patient should be frightened, than lulled into a false security. He has seen decided advantages from a warm climate in incipient phthisis. But invalids, he remarks, are not to imagine that a single winter's residence abroad will be sufficient to

restore to health a person whose lungs are affected. It will often be found necessary to continue several years out of England—in some instances, the whole of the person's life. He has known some fatal consequences from returning prematurely to England. From all Dr. Carter has been able to learn, "it is only in cases of incipient phthisis that a warm climate is of any advantage."

"When the disease has assumed a marked character, when there is much cough, with purulent expectoration, flushing, and a frequent pulse, and emaciation, I believe that climate never effects a cure, and very seldom prolongs the existence of the sufferer." P. 64.

In such cases, indeed, we ourselves and many others have seen the disease hurried on, as the warm latitudes were approached. Mr. Risso, a gentleman of Nice, is now employed on a work to prove that residence on the *sea-coast* is injurious to consumptive patients. We suspect that the disadvantages are owing to something in the topography of the place: rather than to its vicinity to the sea. No example of recovery from confirmed phthisis has occurred at Nice, by our author's account——nor in many other places, we fear! Yet he says the climate of Nice is as good as that of Lisbon or Naples, while it is superior to that of Marseilles or Montpellier, where patients suffer much from the north and north-east winds. And, as it is pretty evident that climate has no power in checking phthisis, after it has passed the first stage, it is to be remembered that the distress, occasioned by travelling under such circumstances, must generally aggravate the symptoms. "More mischief is done by the journey than the finest climate can repair." Besides, if the patient do struggle through the winter in Italy or the South of France, he is obliged to move again in the summer, to avoid the intemperate heat; and thus travelling soon becomes irksome to an invalid, especially where the accommodations are so bad as in the countries in question.

In the *early stage* of phthisis Dr. Carter thinks there can be no doubt of the service derived from a sea voyage, the sickness thereby induced being probably more efficacious than that from medicine. In confirmed phthisis, however, whether the sea air be injurious or not, the sickness exhausts the patient without alleviating his complaint, while the tædium and discomfort of a ship render a voyage almost as bad as a journey by land. In short, our author thinks, and so think we, that "persons in confirmed phthisis should never quit their own country."

A warm climate being allowed to be useful in incipient phthisis, the next point to ascertain is—the most eligible residence. Madeira, our author believes to be the finest climate in the world. We much doubt this. But there are many objections, particularly the mountainous nature of the country, rendering it almost impossible for the invalid to take proper exercise. In Spain, Barcelona, and Malaga, Dr. C. thinks are good winter residences, if the patient can make up his mind to see few of his countrymen, and meet with little to amuse or interest him. At Lisbon the weather is often so cold and rainy, in winter, that it cannot be recommended. Marseilles Dr. C. considers an improper place. The sun is powerful, while the north wind, when it blows, is piercing cold. What is worse than all, the changes of temperature are sudden and great. The same observations apply to Montpellier. The sea wind is said to be so loaded with moisture, that when it prevails "the furniture and beds become excessively damp." Hyeres, Dr. C. thinks, is probably the best residence in France, as to climate; but there are many objections to it. It is poor —affords but very indifferent accommodations—no society—nor medical assistance that can be relied on. Florence "is decidedly a bad winter residence." "The climate of Rome is not to be compared with that of Naples, which is, indeed, delightful." The only objection is the Scirocco, or south-east wind, which in summer is very oppressive, but in winter bearable.

"The scenery around Naples never ceases to be interesting: and the general fineness of the weather, and facility of conveyance from one place to another, enable an invalid to procure much instruction and amusement without risk or fatigue." P. 78.*

Upon the whole, our author thinks Naples an elegible winter residence; yet if the fascination of scenery and the interest of the environs of Naples be put out of the question, our author would give the preference to Nice above every other part of Italy with which he is acquainted. The walks and rides about the town are as varied and pleasant as can be desired, and the botanist and geologist may gratify their curiosity.

But wherever the invalid may fix his residence, there are certain precautions, which he should always bear in mind. He must not trust too much to the mildness of the weather,

* It may not be improper to say that, in Dr. Milo, resident physician at Naples, (a gentleman to whose professional character we can speak from personal knowledge) the English invalid will find a countryman, in whom he may place the fullest professional confidence.

and throw off too hastily those clothes to which he has been accustomed. He ought not to be out late in the evenings. The invalid should not expose himself to the sun, and then stand in the shade; between which, in all warm climates, a great thermometrical difference prevails. He should not expose himself to the prevailing winds. In his diet he should be cautious; for although the wines are very pleasant, and not so heady as our own, they are obviously improper where the lungs are weak. The high seasoned dishes, so common abroad, are to be avoided, as well as the sauces of which the French and Italians are so fond. The fruits of the South, however, are wholesome and refreshing, especially if taken before dinner.

Neither Naples, Nice, nor any of the places enumerated by our author, are considered by him as proper summer residences for the pulmonary invalid; "some of them being extremely unhealthy, and all of them too hot at that season."

"In the early part of the summer, perhaps, the banks of the Lago Maggiore, or of the lake of Como, or some spots in Tuscany, or Grasse in France, might be selected; but in July, and the two following months, the heat is too great even at these places; and it will be advisable to move to Geneva, or somewhere in the neighbourhood of that town. There are several spots near Geneva which are reckoned very healthy, and where the climate is good in summer, Mornex is one of these. About the commencement of October the patient may return to Italy or the south of France." 86.

If the winter residence have been Lisbon, the patient should move, as soon as the hot weather sets in—say to Cintra, for example, where the country is eminently beautiful, and the air always cooling and refreshing.

Our author makes a few brief remarks, in conclusion, on the influence of a warm climate on some other diseases besides pulmonary complaints. Over gout he has seen climate exert a powerful influence. One striking instance of which he relates. A patient inherited a predisposition to, and was early and universally affected by, the disease. He was nearly deprived of the power of walking, and his stomach had become seriously deranged. During this gentleman's journey from England he experienced a severe attack of atonic gout, which confined him for several weeks. He arrived at Nice late in the autumn, and greatly debilitated, with much derangement of stomach and bowels. At Nice he continued a considerable time, and recovered not only the power of walking, but the healthy tone of his digestive organs. Chronic rheumatism and asthma are slightly noticed as being benefited by a warm and equable climate. Dr. C. informs us that it is now fashionable to send

patients abroad for deafness; but this disease has not appeared to be in the least benefited thereby.*

For further information on this subject we refer our readers to Dr. Clark's very interesting little work on climate, which should be recommended to every patient before he parts from England, as containing many valuable remarks and much important information, touching his convenience as well as health. The extent to which we have carried the analysis of this article, will shew our estimation of its utility, as well as our respect for its worthy author.

On the Medicinal Properties of the Solanum Tuberosum, or Potatoe Plant. By JOHN LATHAM, M. D. F. R. S. the President.

WE have many medicines, but few remedies. Of the former, many are expensive exotics, as opium for example; and therefore it would be exceedingly desirable, both in point of economy, and to check the inducements towards adulteration, if substitutes, of easy access and cheap materials, could be procured. This is leaving out of the question the chance or hope of discovering useful properties in the new articles investigated.

The potatoe, being a species of solanum, might be conceived, as Dr. Latham observes, to possess qualities analogous to others of that class; "but experiments to ascertain the fact had hitherto been wanting to fix its character as an article of materia medica." Accident led Dr. Latham to ascertain the narcotic powers of this plant on the human body, and he thinks the effects produced in the following cases "will perhaps entitle it to a rank of no mean estimation in the catalogue of medicines."

From about seven pounds of the leaves and stalks, Mr. Hume, of Long Acre, prepared for Dr. L. nearly a pound of extract, in the taste of which there was nothing peculiar that might prove disgusting to the patient. The dose, at first, was half a grain three times a day, which was soon raised to two grains at a dose.

The first patient to whom Dr. Latham exhibited the medi-

* We suppose it will soon be necessary to send patients to Italy, or the South of France, for blindness, corns, warts, &c.

cine, and by whom he ascertained the dose, laboured under cough, with mucous expectoration. "As much relief was obtained as might have been expected from the extract of conium, under similar circumstances. No distress was felt in the system; but the patient imagined that his bowels were rather more relaxed than was usual with him."

The second was a very old case of rheumatism, with distortion of the limbs, articular nodosities, chronic cough, and at times intolerable headache. While taking the smaller doses of the extract, the patient felt something like the tremor and disturbance sometimes produced by digitalis. The solanum was therefore suspended for a few days and again renewed. The dose was now gradually increased to a grain every six hours, and, in a few days, to *two grains* with directions, should stupor or tremor come on, to discontinue the medicine. The tremor did come on, and the dose was ommitted *once*. It was them resumed with considerable advantage, the cough and other painful affections being much alleviated. Three grains of the extract with one of rhubarb were now ordered three times a day; "and after an interval of three days I found her still freer from pain, and more comfortable, as she expressed herself, than she had been for several months. A few days afterwards, however, the tremor, with much headache, recurred and continued for some time. These went off by a dose or two of rhubarb.

The third case was that of a lady who had a small calculus lodged in the ureter. She was ordered three grains of the extract three times a day, from which she experienced much relief. In four days the piece of gravel passed into the bladder, and was afterwards voided. She was soon quite well.

We shall pass over the two next cases, as not very satisfactory, to notice the sixth, which we shall quote entire.

"A young gentleman, about twenty years of age, had been afflicted with almost constant cephalalgia for two or three years. Various had been the means employed to procure relief, without any sensible advantage; bleeding, cupping, leeches, blisters, purgatives, antimonials, mercurials, &c. had successively been tried, and afforded not the least benefit. I put him also upon several plans without any permanent relief; conium with submurias hydrargyri, steel with aloetic preparations were tried. The rectified oil of turpentine was then given in the dose of an ounce and a half at once. Some remissions were certainly experienced for an hour or two in the day, and after the turpentine, for a whole day, but then the pain recurred as usual. I now directed three grains of the extract of solanum three times a day, having indeed about a fortnight before, given him the smaller doses of one grain without any effect. After having tried the solanum in the increased dose for a week, he came to me in a much improved state, not having had any pain for a longer time than half an hour in the day, and that in a greatly mitigated degree. In a few days, however, the pain returned, and I directed the dose to be gradually increased to six grains. He could

not go beyond five grains, for after each dose considerable stupor was produced for about two hours, when the pain returned, although in a less degree. He was now desirous of returning into the country, where I recommended him a plan of decoct: aloes with chalybeate wine." 102.

The last case was one of supposed angina pectoris from water in the chest or perhaps organic disease of the heart itself. Under the use of the solanum tuberosum, "his pulse certainly became regular, and he thought himself better, as he had been able to call upon me with less difficulty. He felt the same tremors from its use as were observed in other cases." 103.

Dr Latham declines detailing several other cases, as the results were very similar to those here stated. A medical friend of his has already advanced the dose to thirty grains, at a time, in a case of cancer of the uterus. Dr. L. concludes thus..

"I am unwilling to say more about the solanum tuberosum, lest I should hereafter be found to have said too much; but I think it superior to hyoscyamus and conium, and therefore with confidence recommend it to my professional brethren, not only in cases where those medicines have been most commonly employed, but generally in all chronic cases where there may be excess of painful irritation or irregularity of action." 104.

We hope those of our brethren who are attached to public institutions, will give this medicinal substance a fair trial as to its narcotic powers, in consequence of Dr. Latham's recommendation.

On certain painful Affections of the Intestinal Canal. By Richard Powell, M. D. Fellow of the Royal College of Physicians, &c &c.

Dr. Powell jusly observes that a knowledge of the causes of disease is always desirable, but not seldom obscure. Every attempt then to establish the relations between cause and effect, is deserving of attention, and will receive it from the profession.

"Whenever," says Dr. Powell, "violent pain takes place in the epigastric region of the abdomen, exacerbating in paroxysms accompanied by sickness, yellowness of the eyes and skin, and urine, by clay-coloured fæces, and without any proportionate increase of action in the circulation, biliary concretions are supposed to be forcing through the ducts; and when these symptoms abate, it is inferred that their passage into the duodenum has been effected."

It is usual, Dr. P. observes, to examine the stools upon these occasions, though the search is often ineffectual. The

biliary concretions, however, are thought to escape, or to be dissolved after they are freed from the biliary ducts. It is Dr. Powell's object in the present paper, to shew that the symptoms usually ascribed to the passage of biliary calculi "are also referable to another cause." And as in the case of biliary concretions, we may naturally expect a repetition of attacks, and no very speedy termination of the patient's sufferings, so, on the contrary, Dr. Powell conceives that "the sort of attack to be here described is more isolated, and when once it has passed, its recurrence is by no means equally to be dreaded as is that of the former."

When our author has suspected the passage of biliary concretions, he has directed the usual large pan to be filled with water, and the faeces to be stirred in it, after which the water has been left to rest long enough to ascertain whether the concretions, as they often do, have risen to the surface. This water he pours off, and repeated similar affusions are made, time being allowed for subsidence between each. The residue is then to be examined. This residue, in the cases to which Dr. Powell refers, "has exhibited a large quantity of flakes mostly torn into irregular shapes, and appearing to have formed parts of an extensive adventitious membrane of no great tenacity or firmness." In the first case that came under Dr. Powell's notice, this membrane was passed in perfect tubes, "some of them full half a yard in length, and certainly sufficient in quantity to have lined the whole intestinal canal." In the others also, the aggregate quantity has been very large, and continued to come away for many days, in irregular thin flakes, of but one or two inches in extent, and not perfectly tubular. Dr. P. has definitely examined four such cases, in all of which the leading symptoms led him to suspect the passage of biliary concretions at the time. They were all adult females. In but one of these our author had been consulted for *previous* ill health.

"She had frequently suffered from occasional pain in the intestines, and derangement of her powers of digestion, with flatulence, and a sense of suffocation. She was always relieved, at the time, by mild opening medicine, and believed herself able to prevent the attacks of pain from increasing to any serious degree of violence, by repeating it according to circumstances. A similar history of liability to frequent recurrence of pain, accompanied by indigestion, was related to me in the other instances. The more violent seizures under which I saw all the patients, consisted in a sudden and excessive pain in the epigastric region, increasing in paroxysms very frequently, rather relieved by pressure of the patient herself at the time, but leaving great soreness and tenderness during the intervals. This state continued under four days; during it the stomach was very irritable, and the tongue coated and clammy. Jaundice came on at an early period, and the stools were white, brown, or somewhat

greenish, and streaked in colours, until the films began to pass, when they were mixed with a full sufficiency of bile, but not at first of a healthy colour. The pulse throughout was calm, moderate, and natural, in none of the instances amounting to 90." P. 112.

There was no indication of inflammation. In one instance Dr. Powell noticed a considerable hardness and contraction of the abdominal muscles; in another case there was superadded to the above symptoms a difficulty in passing the urine, with pain in the region of the bladder, requiring the use of the catheter.

Suspecting the passage of concretions, in these cases, Dr. P. did not order venesection or emetics.

"The practice, indeed, which appeared to me most advantageous, was the steady use of a mixture of the infusum gentianæ compositum and infusum sennæ, with the addition of from ℥ss to ℥ ss of liquor potassæ, repeated so as to produce four or more stools in the twenty-four hours. Under its use the flakes first separated, and continued to do so, in great abundance; the jaundice disappeared, and the patients recovered health and strength." P. 114.

Saline purgatives had been tried at first, but under their use the canal did not appear so completely to discharge its contents as when the medicine abovementioned was exhibited.

Dr. Powell observes that the formation of adventitious membranes in the intestinal canal has not been so frequently noticed as it has in circumscribed cavities. "The appearance which comes nearest to it, both in resemblance and situation, is the membrane formed in the trachea under croup.' but the symptoms are there more violent and destructive from locality of situation. The most remarkable circumstance, our author thinks, is "the production of an effect usually ascribed to inflammatory action without its previous existence." Coagulable lymph is known to be thrown out upon the mucous membrane of the intestines in inflammation, but in the cases in question, Dr. Powell thinks there was no evidence of an inflammatory process going on, as the pain was rather of a spasmodic nature, and the skin and pulse remained natural. Our author missed the opportunity of chemically examining the flakes thus evacuated; but a quantity of them put into spirit of wine "was contracted by its action, so as to look almost fibrous rather than membraneous, as at first, by which one would be led to suppose that they may consist of albumen, though this is only a supposition."

We have not interrupted the thread of the analysis, in order that we might introduce a few observations of our own at the end. We have seen several cases of the kind described by Dr. Powell, and we have experienced them personally, so that

our attention has been a good deal directed to the pathology and treatment of the complaint.

Every one who has much of dysentery, whether in hot or cold climates, must have observed those portions of adventitious membrane (if the term be allowed) frequently come away, especially towards the close of the disease in bad or fatal cases.* The symptoms during life, and the examinations after death, have pretty clearly proved these productions to be the result of great irritation and inflammation in the mucous membrane of the intestines: we know too that irritating substances swallowed have caused tubular exudations to be formed and thrown off by stool, precisely similar to those we are speaking of. Tartra, for instance, relates the case of a woman who had swallowed a quantity of nitric acid, and who, on the twentieth day afterwards, passed, *per annum*, a long membraneous packet, in one entire piece, rolled up and folded on itself, which, on being disentangled, exhibited a complete mould of the œsophagus and stomach, with all their sinuosities. From the moment this was thrown off, the internal surface of the œsophagus and stomach became so sensible and irritable that death ensued in a few days.†

"Thd false membranes," says Villermé, "of the mucous membrane of the alimentary canal, are perfectly similar to those formed in croup. The fragments passed by vomiting or by stool, are generally soft, pulpy, and without any appearance of organization. *The re-agents which concrete albumen render them hard.* Sometimes these flakes are considerable, and when developed in water, represent entire tubes broken off irregularly at the ends, which have led to the erroneous opinion that they were portions of the mucous membrane of the intestines. I have had occasion to see great quantities of these adventitious membranes passed by stool, in the colic of Madrid. They were generally of a gelatinous consistence, and inveloped in mucus. One of these exhibited an exact mould of the intestine, being tubular, and some inches in length." *Dict. des Sciences Med.* vol. 32, *p.* 261.

In such cases there can be little doubt of the formation of these false membranes being the legitimate product of irritation and inflammation, in the same way as they are formed on the serous surfaces, as we shewed in our article on peritonitis. But we meet with the said membraneous substances under very opposite circumstances; viz. in sedentary persons, especially females, who have languid and imperfect digestion, with a torpid state of the biliary and intestinal secretions. Here gelatinous concretions would appear to take place on the internal surface of the intestines, and even the hepatic ducts themselves, from mere remora of the fluids and want of energy

* See Morgagni, 31st Epistle, for example.

† A. B. Tartra, de l'empoisonnement par l'acide nitrique, p. 169.

in the secretory glands and organs. To this obstruction of the biliary ducts, we have traced many instances of jaundice, accompanied by all the symptoms attending the passage of a biliary calculus, as described by Dr. Powell. At the decline of the disease, we have not only seen the membraneous fragments mentioned by Dr. Powell, but we have seen substances resembling worms or vermicelli, of different sizes and lengths, and which were evidently of the same nature as those broader fragments that had lined the intestines. We conceive they had lined the hepatic ducts. The cases detailed by Dr. Powell all evinced obstruction to the flow of bile into the intestines, and regurgitation of the same into the current of the circulation, accompanied, of course, by icterous suffusion and white stools.

To those, however, who may feel difficulty in conceiving that these albuminous incrustations can be owing to mere inactivity of the secretions, we would suggest another view of the subject. Where we find defective and irregular secretions of the chylopoietic viscera, we almost invariably find the secreted fluids depraved in quality—being sometimes extremely acrid, fetid, and irritating; at others, scanty and insipid. Now, whoever has been so unfortunate as to be afflicted in this way, can vouch for the train of painful and uneasy sensations which occupy the line of the alimentary canal, while these depraved secretions are passing, and will very readily believe that such sources of irritation may be quite adequate to the production of those gelatinous exudations, which, in other cases, have been clearly traced to irritation and inflammation. That the irritation of depraved bile itself has often caused spasmodic constrictions of the biliary ducts, and thereby produced jaundice, is believed by many; and it is stated in a recent publication, on affections of the liver, that—

"The symptoms attending these spasmodic constrictions of the biliary ducts are sometimes as violent as those where calculi are impacted. Indeed it appears to be the spasm, in both cases, that causes the intense pain."*

The same author observes that:—

"The passions have a most remarkable effect on the secretion, and also on the ducts of the liver. A fit of anger will so derange the state of the bile, as to tinge the skin yellow in a few hours. *A sudden and unnatural acrimony of a secretion may very readily excite the organic contractibility of a tissue composing a canal, and thus occasion a stricture of its calibre for the time being.* In this way I have no doubt that jaundice is often induced by mental emotions, as anger, jealousy, grief, &c.†

In addition to the judicious therapeutical measures detailed by Dr. Powell, in the complaint under consideration, we may

* On Derangements of the Liver, p. 77. † Ibid. p. 76.

be permitted to state that in the paroxysms we have found the warm bath—warm fomentations—leeches—and blisters, serviceable as external remedies; and that internally, we have been in the habit of allaying the pain and irritation first, by pretty large doses of opium and hyoscyamus, and then acting on the bowels pretty briskly by compound extract of colocynth, calomel, and hyoscyamus, aided by purgative enemata to solicit the peristaltic action.

It is of more importance, however, to prevent the recurrence of these distressing attacks, and we are convinced that this can only be effected by not only regulating the state of the bowels, but by correcting the depraved secretions themselves. This is to be done by strict regimen, great attention to the functions of the skin, and by such remedies as act on the biliary secretion. We have recently removed the tendency to this complaint in a lady, who for several years, seldom passed two months without an attack similar to what Dr. Powell discribes, by alterative aperients, generally aloes, soap, blue pill, and ipecacuan, together with a steady perseverance in the use of the nitro-muriatic acid bath. She now rarely takes any medicine internally; but has recourse to the bath, when the secretions become dark or light-coloured, by which means they soon became improved. She has experienced no attack for seven or eight months past.

We think the profession are much indebted to Dr. Powell for having drawn their attention to a painful complaint whose etiology was badly understood, or absolutely mistaken in many cases, and whose treatment was consequently defective.

Narrative of Facts relative to the repeated Appearance, Propagation, and Extinction of Plague among the British Troops in Egypt, in the Years 1801-2-3. By John Webb, Director General of the Ordinance Medical Department.

Although it is highly improbable that, under existing circumstances, and in the present improved state of society, the plague shall ever revisit, or, at all events, *spread* on the British soil, yet the solid proofs of its peculiar and contagious nature, (drawn from ample experience, not insane reveries of the closet,) are deserving of record, in order, at any

future time, to silence the idle dreams or visionary speculations of those who may endeavour to force themselves into notice, not by the exertion of well-applied talent, but a pugnacious attack upon some well-founded principle.

The great body of this paper is taken up with official documentary evidence of the facts mentioned in the title of the article, and which we must pass over, as not necessary to be noticed in this place. They clearly establish the contagious character of the disease, and exhibit practical examples of the means of bounding its ravages, when it unfortunately finds its way into a fleet or an army.

"So far," says Mr. Webb, "as my own experience, aided by enquiries, enables me to form an opinion on this intricate subject, I am inclined to consider the plague as much an inhabitant of Egypt, as the small-pox is of England." And again—"various other particulars occur to my mind, in confirmation of what I have advanced, but presuming those I have already adduced are amply sufficient to prove the contagious nature of the plague, I shall only beg to say, in conclusion, that if I were again so circumstanced as to have the care of preserving the army, or a community from the calamities it occasions, confided to me, I should consider no plan of precaution of any avail, if not founded on a full admission that pestilential contagion is one of the most subtle poisons that exists, as well as the most destructive to human life; and that there is no safety for strangers in the countries subjected to its ravages, whether the disease be prevalent or not, but in adopting and uniformly observing teh strictest precautions to avoid the sphere of its action." 168

It is needless to say that in these sentiments we entirely agree, with an exception to the first sentence. For as we do not consider the small pox an inhabitant of England, particularly, neither do we believe that the plague is bounded by the limits of Egypt. This would be making them local or endemic diseases, whereas we know them to be specific contagions, very capable of being transported from place to place, and even from country to country.

Our analysis of the volume under review will be continued in the next number of this journal.

Practical Essays on Surgery and Ophthalmology. By Ph. Fr. Walther, M. & C. D. Professor of Surgery and Clinical Surgery in the University of Landshut, &c. Volume 1st, 3 plates. 8vo. pp. 504.

(From the Quarterly Journal of Foreign Medicine and Surgery.)

THERE are four Essays in this volume: 1. on the diseases of the crystalline lens, and the origin of cataract, page 1. 2. On amputation at the joints, particularly at the shoulder, and

between the first and second row of the bones of the tarsus, p. 91 3. On the use of mercury in tetanus and hydrophobia, p. 166. On the varieties of inflammation occurring in the eye, and their symptoms, p 359.

It is certainly somewhat singular that the pathology of a disease so frequent in its occurrence as cataract, should not hitherto have been investigated; that, contented with observing opacity of the lens, we should not have inquired into the causes of so striking a change, and made it a matter of inquiry whether the loss of transparency in the lens constitutes of itself a disease, or be merely the common product of various morbid affections of the lens and its capsule. In the first essay of the present volume, we have an attempt to supply these desiderata, that essay containing a description of some of those processes which precede or accompany the loss of transparency in the lens and its capsule. That the structure and mode of nourishment of these parts gives a peculiar character to their diseases, cannot be a matter of doubt. Whether the fibrous structure of the lens, discovered by Reil, exists during life, or only takes place after death, is a matter of less consequence to our present inquiry; of more importance is the question, how the lens, floating loose in its capsule, and unconnected to it either by cellular membrane or vessels, is nourished. It is no doubt true, that some have inferred the existence of a vascular communication between the capsule and lens, but it has never been detected by the senses either in man or animals, and the supposition that this is rendered impossible from the extreme minuteness of the vessels, is contrary to all analogy. Where an organ is contained loose in a cavity, its blood-vessels come to it in the form of a few large trunks enveloped in a process of the lining membrane of the cavity as is the case with the testicle; and where the vessels are distributed from the whole inner surface of the membrane to the organ it covers, they are in the form of a minute network, and the two parts are then necessarily adherent, as for instance the periosteum and bone. Our author is of opinion, that there are no vessels going from the capsule to the lens, but that the latter is nourished by imbibition; that it absorbs its nourishment from the liquor morgagni, into which it again deposits its waste; or, that the lens is nourished in the same way as plants and those animals in which there is no regular circulation, but merely absorbent and exhalent vessels having no common centre. On this view of the subject, the nourishment of the lens must depend on the integrity of the few ves-

sels which go to the capsule from the central artery of the retina and those of the corpus ciliare. When contusions attended with considerable concussion of the eyeball occur, these vessels becoming lacerated, the secretion of the liquor morgagni is interrupted, and the loss of transparency of the lens ensues; the same is the consequence of the obliteration of these vessels in old age. The healthy secretion of the liquor morgagni is likewise necessary for preserving the pellucidity of the lens, for when that fluid becomes intransparent, constituting cataracta Morgagniana, it is always quickly followed by opacity of the lens. In a similar manner, the capsule rarely becomes opaque without the lens becoming affected, and when it does occur, which is only in young individuals, the transparency of the lens is never quite perfect, and never of long continuance.

Our author is inclined to think that the lens is originally turbid in the fœtus, for it is scarcely possible to conceive such processes taking place in the fœtus as would render a lens, previously clear and transparent opaque. Congenital cataract is the consequence of a check being given to the development and progressive metamorphosis of the embryon. In this it agrees with other malformations, which do not arise accidentally from the influence of particular causes, but are actually originally present in every human embryon at certain periods of its existence, and afterwards disappear in the progress of that embryon to more perfect and nobler forms; whilst on the contrary, should this progressive metamorphosis be checked, the imperfect condition remains, and is met with still existing at birth. In dissecting fœtuses under the age of three months, our author has generally found hare lip existing, and the palate cleft so as to leave but one cavity for the mouth and nostrils which is afterwards divided by a septum. The iris is originally imperforated; and imperforation is the primary state of all parts where the apertures of the body are afterwards formed. The anus, vagina, &c. are originally covered with a production of the integuments. Anchyloblepharon and symblepharon are original conditions of the eyelids, and it is only at a certain stage of the life of the embryon that these curtains detach themselves from the eyeball which is then naked, but is afterwards covered by a reflection of the integuments, previous to which a horizontal chink opens in the eyelids. Umbilical hernia at one time is present in every embryon, for the cavities of the abdomen and umbilical cord are

one, and the intestines being contained in both indifferently, there is then no ring (umbilicus) to form limits to each.

These analogies, which might be pushed much further, leave little doubt that cataract is originally a natural state of the lens, which subsequently becomes clear and transparent by continued progressive development. There are two kinds of congenital cataract; in the one, the cataracta lactea, the milky fluid which fills the capsule would seem to be the real matrical fluid out of which the lens is evolved; in the other, the cataracta centralis, the generative impulse has been sufficient to render the outer laminæ alone of the lens tranparent, leaving its centre in its turbid state.

Cataract frequently arises during inflammation of the internal parts of the eye, so that there can be no doubt of its being produced by that process; and as will be afterwards shown, inflammation not only attacks the capsule, but even the lens itself, occasioning turbidity of these parts. One of the most evident cataracts from this cause is that which follows wounds of the eye, in which the turbidity forms in the course of a short time during the progress of the inflammation consequent to the injury, and, as many good practitioners have taught us, disappears under the continued use of antiphlogistic remedies. There is another cataract which succeeds wounds, part cularly contusions, accompanied wth considerable concussion of the eyeball, but it is not the effect of inflammation: it occurs a long time, perhaps months, after the accident, and arises from the laceration of the few delicate blood vessels which go to the capsule. The opacity of the lens, which originates during the syphilitic and arthritic ophthalmiæ, no doubt arises from the inflammation spreading to the capsule. And in those cases, which are not very rare, where the lens is universally adherent to its capsule, both of these parts must have been the seat of inflammation.

The analogy between the effects of inflammation in altering the transparency of the lens and other pellucid parts of the eye, is striking. Suffusion of the cornea is almost the sole symptom of corneitis, for when red vessels appear among the lamellæ of this membrane it is only from a particularly violent inflammation, and the appearance of these vessels has always been preceded by the suffusion. Specks of the cornea, from the thinnest nebulæ to the thickest leucoma, are simply partial indurations of the cornea, the consequence of previous inflammation. Glaucoma, presuming it to consist in partial or total opacity of the tunica hyaloidea, never occurs, ac-

cording to our author's experience, without preceding inflammation of the internal parts of the posterior hemisphere of the eye.

Many symptoms which accompany the early stages of cataract denote the presence, if not of acute, at least of chronic inflammation. To this may be referred the great sensibility to light which sometimes remains even after the cataract is fully formed.

Gleize has remarked, and it is well known to all attentive practitioners, that in operating on cases of cataract in which the turbidity is of recent existence, there is always a greater tendency to inflammation succeeding the operation; so that if both eyes of a patient affected with cataract be operated upon exactly in the same way in every respect, the inflammation which attacks the eye that has been last affected is usually most violent, owing probably to the still existing slight inflammatory action in this eye, which here, as elsewhere, disappears as the inflammation terminates in induraton.

Professor Walther has repeatedly observed inflammation in the capsule, and pointed out cases of it to his pupils, who after having been once accustomed to such examinations, have readily distinguished it themselves. It usually occurred in men about the middle of life and of a slightly cachectic disposition, and was always preceded by a string of various local affections, which had often commenced with itch, gout, or catarrhal affections. The disease occurs oftener in light eyes than dark, and is always accompanied with a slight change in the colour of the iris and form of the pupil, the first becoming a little darker, and the pupil slightly oval and drawn upwards and inwards to the root of the nose. The motions of the iris are at first more lively and extensive to partial variations of light, but subsequently they become more sluggish. The pupil is habitually smaller than in the sound state, and there usually exists a black ring of irregular breadth all round its edge, produced by a real eversion of the uvea, that is, the pupillary edge of this projects beyond the same edge of the real or anterior membrane of the iris.

Along with these symptoms, a number of red vessels now appear in the pupil itself, the largest of which are visible to the naked eye, which has been accustomed to such investigations, but the greater number are only distinguishable with the aid of a sextuple magnifying glass. What to the first appears merely a red point, assumes, under the glass, the appearance of a most delicate tissue of vessels. The lenses used

for such microscopical examination of the living eye should have a very short focus, and the patient ought to be so placed with respect to the light that the parts within the pupil be well illuminated, and not shaded by the glass or head of the examinator. In order to have the pupil as large as possible, the other eye should be kept closed during the examination, and a little of the solution of the extract of belladonna may be dropped between the eyelids an hour previously. And in inflammation of the capsule of the lens, the sensibility not being much increased, the patient can bear examination of the eye in a strong light, and with dilated pupils, without much uneasiness.

The red vessels observed in the pupil during inflammation of the capsule always constitute a sort of vascular wreath, situated at about a quarter of a line's distance from the pupillary edge of the iris; this wreath forms a concentric circle with the pupil, and is found on examination to consist, not of a circularly disposed vessel or vessels, but of a number of vascular arches, similar to those formed by the arteries of the palm of the hand and joint of the knee. To this vascular wreath there run in a radiated form, as to a common centre, numerous vessels from the periphery of the anterior capsule. Some vessels seem to extend from the pigmentum of the uvea into the capsule, and might lead us to suppose that all the vessels seen in the pupil are merely prolongations of those on the posterior surface of the iris. This, however, is not the case; sometimes there are no such vessels present; where they are, it is only after the disease has lasted some time that they appear; whilst at other times, vessels are seen prolonged from the capsule into the uvea, reciprocally as those of the latter into the former. Besides, these prolonged vessels are observed to have an oblique direction with respect to the axis of the eye, and they never are the largest trunks, which we see come from the edge or circumference of the capsule. The vessels going between the iris and capsule never arise from the very edge of the former, but at a little distance from it on the posterior surface, so that nearly a line's breadth of the pupillary portion is free from these vascular sproutings.

From the vascular wreath we have described, vessels are seen spreading towards the centre of the anterior capsule, and there again forming clusters and arches; and although the connexion between the vessels seen in different parts of the pupil seems interrupted at some points, yet there is no doubt it

holds good universally, although, from the extremely minute size of the vessels, they cannot be distinguished.

Posterior to the red vessels seen in the capsule, there appears in some cases a network of more delicate vessels deeper seated developed in the lens itself, the larger trunks of which are not always derived from the circumference of that body, but evidently come from its posterior surface directly forwards and then divide into branches.

The presence of these vessels in the lens, our author has repeatedly and distinctly observed, and he states that they present one of the most beautiful phenomena possible; that the only thing that comes near them is the finest injections of the choroid coat of the eye, such as are possessed by Sœmmering, and that the most successful injections of the villous coat of the intestines are far inferior to them. The existence of these vessels in the body of the lens in a state of inflammation, would seem to contradict the theory of the nutrition of that body which has been previously mentioned, and the supposed non-existence of vascular connexion between the lens and its capsule. However, our author is of opinion that the vascular connexion between these is entirely morbid, and is the same as that which occurs in inflammation of the chest where vessels are prolonged from the surface of the pleura into the pseudo-membrane formed on its surface, and that as the vessels of the anterior capsule shoot forwards into the pigmentum of the iris, so in a similar way they shoot backwards into the lens itself, and that the same holds good with respect to those of the posterior capsule, which, being more copiously supplied with vessels, explains the fact of the largest vessels in the lens being seen to come from behind forwards. Moreover, it would appear that all inflammations of the lens begin in the capsule and thence spread to the former, in the same way that it often happens that inflammation seated primarily in the neighbouring parts, as the membrane of the vitreous humour, the corpus ciliare, and iris, sometimes extends in a secondary manner to the capsule.

At the apparent terminations of several of the vessels in the capsule, we distinctly perceive small knotty points of a whitish gray semi-transparent substance, evidently coagulable lymph, the presence of which effusion serves to disclose the manner in which inflammation of the lens and capsule produces opacity in these parts. The anterior capsule, where the vessels are very numerous, sometimes assumes a peculiar velvety floculent gray or brownish appearance, which has led

some to the idea that a flake of the pigmentum of the iris or choroid has been detached and become adherent to the capsule of the lens, and which has led to the cataracta choroidea of Richter. But this is a mistake; we never find that a piece of the pigmentum has been detached, even when the greatest violence has been offered to the eye, the corpus ciliare lacerated, and blood effused into the chambers of the eye and under the conjunctiva. And even supposing it detached, would it become adherent to the capsule, instead of floating in the aqueous humour and being absorbed? The brownish spots on the anterior capsule are in some cases occasioned by the effusion of lymph, and by the extreme terminations of the vessels; and our author has several times in this kind of cataract, which is not at all rare, observed, with the aid of a magnifying glass, the vessels of the capsule and their prolongation into the spots mentioned. In other cases, the capsule had been previously united to the uvea by partial adhesions, and being separated either by the more lively motions of the iris, or by the application of mechanical violence, part of the pigmentum of the uvea had remained attached and adherent to the anterior surface of the capsule.

As to the state of the patient's vision who is affected with inflammation of the capsule of the lens, when the disease is severe, vision is indistinct and confused, particularly when looking at distant objects, whereas those that are nearer are seen as if through a fine gauze, but without distinguishing therein some threads larger than others corresponding to the vessels. Neither does this gauze seem red, nor are objects tinged with that colour.

Inflammation of the lens, as that of the bones, cartilages, and fibrous textures, always observe a chronic course. It proceeds very slowly, and is accompanied with little pain; nay, in some cases, none whatever, and when pain is present, it is not seated in the part itself, but at the bottom of the orbit, over the forehead, or in the crown. When the disease has lasted some time, the blood-vessels in the lens and capsule become varicose and remain stationary so. This state of the lens is the same in kind with that which Scarpa and others have observed in the external parts of the eye, and called ophthalmia varicosa—a state intermediate between inflammation and its consequences. In a middle-aged man, whose mother had had cataract and her vision restored by extraction, our author observed the vessels of the lens to remain in their

varicose state a whole year without undergoing the least alteration.

The various kinds of cataract correspond with the different terminations of inflammation; thus the firm hard cataract is induration of the lens; the fluid cataract, where the capsule contains a milky and puriform fluid, seems to correspond with suppuration in other parts; and in the cataracta arida siliquata the lens is in the state of dry gangrene.

In order to understand in what manner inflammation produces opacity or induration of the lens, we may refer to the origin of specks of the cornea from corneitis, when these are not occasioned by abscesses of that membrane. During the inflammation, the secretion of the serous vapour (which occupies the interstices between the lamellæ, keeps these separate, and preserves the transparency of the whole,) is either morbid in quality, or it is entirely suspended. In the latter case the lamellæ come into direct contact and unite to each other by adhesive inflammation, whilst in the first case, instead of the clear serous vapour, coagulable or even puriform lymph is poured out between the lamellæ, and unites them together as a pseudo-membrane, and in both cases opacity of the places where the lamellæ are adherent is the consequence. In the same way as those of the cornea, the lamellæ of the lens also become adherent, in consequence of inflammation, the secretion of the vapour between them being stopped or vitiated. The turbidity which is the consequence is at first of a whey colour and partial, and, by degrees, extends to the whole lens; the seat of the beginning of the opacity is uncertain, sometimes one place and sometimes another, in which this kind of cataract differs from the cataracta senilis, where the opacity begins in the centre of the lens and extends to the circumference.

Though, from the structure of the lens, inflammation is most apt to end in induration, suppuration of it occurs frequently enough, for we must consider this as the cause of the cataracta lactea or purulenta, and the variety of it the cataracta bursata seu cum bursa ichorem continente of J. A. Schmidt. In the first, the lens is found wasted away, and its place occupied by a white milky fluid contained in the capsule, which is sometimes so like pus in its appearance as to have given occasion to the name of cataracta purulenta being long since given to it. La Peyronie found a puriform fluid between the capsule and partially wasted lens; and in the cataracta bursata, where besides the cataractous lens there is a

sac filled with ichor in the opaque capsule, it seems that this can only have arisen from partial suppuration of the lens.

In the cataract named by Schmidt, arida siliquata, the lens and capsule are quite exsiccated like a piece of mummy, and shrunk up into very little bulk as other completely sphacelated parts.

Induration of the lens may also take place without inflammation, and then it seems more of a scirrhous nature; indeed it is well known that cataract often occurs at the period of life, and under circumstances which appear to favour the occurrence of scirrhus in other parts of the body. Purulent cataract may sometimes also be the effect of ulceration of the lens.

Besides inflammation, suppuration, induration, sphacelus, and varicosity of the vessels of the lens and its capsule, there are other affections of it which appear to be of a sarcomatous nature, such are the cataracta pyramidata, cataracta cum zonula, and cataracta arborescens. In the first (the pyramidata,) from the opaque capsule, which is likewise thickened and contains a turbid caseous fluid, there projects an opaque substance of a pyramidal shape, having its point passing through the pupil into the anterior chamber, and in the substance of the capsule are seen shining silvery streaks running in various directions, and sometimes points on its surface of the same appearance. In the cataracta arborescens the peculiar affection is not confined to the capsule, but involves also the lens, where between the different opaque streaks the rest of that body is quite transparent.

In giving the analysis of this Essay, we have been anxious to keep as strictly as possible to our author's meaning, convinced that however visionary some of his opinions may at first sight appear, still they have the merit of being ingenious and original, and merit on these accounts to be candidly laid before the profession. As for the facts concerning the inflammation of the lens, we have no doubt of their truth, and we may add the words of the author, "that these must produce practical results, although they are not touched upon in the Essay itself. To instance one, I consider incipient cataract no longer incurable, and I have already combatted it with success in some cases."

From the full account we have given of the first Essay of this volume, and the press of other important matter, we must leave the consideration of the others to a future opportunity.

Journal de Physiologie, &c.—Journal of Experimental Physiology. By F. MAGENDIE.

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(From the Medical Intelligencer for February, 1821.)

IF a correct knowledge of the laws which govern the animal economy be really attainable; then is physiology a study deserving our utmost attention;—and the labours of those who pursue it with the greatest ardour, are fit objects for our consideration. In this point of view, the editor of the French journal, which we have the gratification of being the first to introduce to the English reader, claims our warmest thanks, and the public applause. Known, for many years, by all the scientific men in Europe, as one of the foremost in experimental investigations, Dr. Magendie, "yet young in age," bids fair to extend the dominion of physiology far beyond the limits which the misinterpretation of animal phenomena, the absurdities of mathematical application, and the intrusion of chemistry, seemed, hitherto, to have assigned to it. We are not prepared to deny, altogether, the justice of Professor Harless' opinion,—that modern experimentalists in physiology, are men for the most part, the least qualified to advance the progress of that science, from their wanting the intellectual talents requisite to enable them to reason well on what *they* may observe; but we can doubtlessly, assert, at the same time, without fear of being contradicted by the Professor himself, that where the ready conception of new experiments is associated with a right discrimination in the application of their results, the study of animal life, with its various functions, cannot fail to make as much progress, as will ever be conceded to us by its mysterious nature. There is, moreover, another great advantage which we derive from the labours of experimental physiologists, and which consists in the opportunity, afforded us by their immediate publication, of applying our own intellectual faculties to their right interpretation. Thus, an insulated fact, first imagined by a solitary mind, in the retirement of the closet, and next proved to be correct by the unassisted experimentalist, being afterwards detailed to the scientific world, may, by the exertion of their united powers of reflection, be converted into a source of the most brilliant doctrines, or the

most useful discoveries. In this respect, then, M. Magendie will be found to have deserved well of his brethren, in undertaking to publish a periodical work, specifically dedicated to the investigation of physiological truths. This work will appear quarterly, in numbers, containing from eighty to ninety pages of matter, illustrated with occasional plates; and, although edited by Dr. Magendie himself, who, of course, will supply the largest portion of the information it is intended to contain, communications of importance, on the subject of physiology, will be found in it, from other respectable authors. Of Dr. Magendie's fitness to conduct a publication of this nature, there is need of no testimonial from us, to enable our readers to judge. But we may be allowed, perhaps, to indulge in an act of friendship,—which is the more gratifying to us, because just,—and state, that we know of no person better qualified for the task; and, that, having founded a new school in the French capital, "for the delivery of lectures on experimental physiology, and the physiological action of remedies on the animal system," which we had the good fortune to attend, some years back,—his qualifications for superintending the compilation of the present repertory of physiological knowledge seem indisputable.

ART. I. *Memoire sur le Mecanisme, &c.—Memoir on the Mechanism of Absorption in warm and red-blooded Animals.* By F. MAGENDIE. (Read at the Royal Institute of France, October, 1820.)

On the reality of the phenomenon of absorption, there is now no dispute. But this fact once established, it became necessary to ascertain by what organs that important function was performed. The author of the present memoir having, on former occasions, investigated this subject, thought himself authorized to conclude—1st, That the veins possess the faculty of absorption. 2d, That no proof exists of the chyliferous vessels absorbing any other substance than chyle. 3d, That the absorbent power of the lymphatic vessels, properly so called, has not yet been established by satisfactory evidence. Many secondary facts, the author contends, were thus explained, which had before remained in obscurity; but the principal question, that concerning the *mechanism* of absorption, continued as yet unexplained. Dr. Magendie asserts, that nothing positive, on this subject, has been advanced by preceding writers; and he, therefore, trusts, that the experiments which he

has detailed in the present memoir, will serve to throw some light upon this important question. Having mentioned the circumstances which led him to institute those experiments, he proceeds to describe them with much precision, accompanying them, at the same time, with appropriate remarks. These experiments consist, chiefly, in producing a sort of artificial plethora, by injecting, in the veins of a dog, nearly thirty ounces of water; and in introducing into the pleura, a given quanity of a substance, the effects of which, on the animal system, are known to be produced through the means of absorption. In all these cases, where artificial plethora had been induced, and the veins consequently distended, no absorption took place, or only in a slight degree, and after a greater length of time, than under ordinary circumstances. The converse of these experiments being made, a result took place the reverse of that which had been obtained by artificial plethora; that is to say, that having diminished, by venesection, the original quantity of blood in another dog, the action of certain substances, to which the absorbent system was afterwards subjected, followed in one fourth of the time in which it is known to occur when depletion has not been previously had recourse to.

To obviate the objection which might have been raised, that the change brought about in the blood by the addition of water to it, and not the distention of the blood vessels, was the cause of the want of absorption: Dr. Magendie bled a dog largely, and substituted the same quantity of water, at the temperature of 85°, so as to leave the original quantity of the circulating fluid the same though changed in its nature. A given quantity of a solution of nux vomica was then introduced into the pleura, and the phenomenon of absorption was as rapid as if no change in the blood had taken place.

It follows, therefore, says Dr. Magendie, that absorption must be wholly influenced by the caliber of the blood vessels.

The further pursuit of these researches led him to the conclusion, that absorption is nothing more than the well-known phenomenon of *capillary attraction*, which takes place when tubes of a small caliber are immersed in fluids;—a phenomenon whose energy is in a direct ratio of the affinity of the fluid for the surface of the tube,—and in an inverse ratio with the diameter of the latter.

What takes place when we expose the extremity of a metallic, or a glass capillary tube, to the surface of a given fluid, is well known. Dr. Magendie employed portions of veins and

arteries taken from dogs, and dead human subjects, to produce the same effect, and in this he perfectly succeeded.

The following experiment is intended to prove, that the same phenomenon takes place during life, which has been mentioned to occur after death; and that the parietes of the larger vessels are equally affected under both those circumstances;—

" Je pris un jeune chien d'environ six semaines; à cet age, les parois vasculaires sont minces, et par suite plus propres à la réussite de l'expérience. Je mis à découvert l'une des veines jugulaires, je l'isolai parfaitement dans toute sa longueur, je la dépouillai avec soin de ce qui la revêtait, et surtout du tissu cellulaire et de quelques petits vaisseaux qui s'y ramifiaient: je la plaçai sur une carte, afin qu'elle n'eût aucun contact avec les parties environnantes. Alors je laissai tomber à sa surface, et vis-à-vis le milieu de la carte, une dissolution aqueuse, épaisse, d'extrait alcoholique de noix vomique, substance dont l'action est très-énergique sur les chiens; j'eus soin qu'aucune parcelle de poison ne put toucher autre chose que la veine et la carte, et que le cours du sang fut libre à l'intérieur du vaisseau: avant la quatrième minute les effets que j'attendais se développèrent d'abord faibles, mais ensuite avec assez d'activité pour que je dusse m'opposer à la mort de l'animal par l'insufflation pulmonaire."

The same result followed a similar experiment, made upon arteries; and a third experiment demonstrated, that the smaller vessels were possessed of the same faculty.

" Je pris le cœur d'un chien mort depuis la veille; je poussai dans une des artères coronaires de l'eau à 30° centig. Cette eau revint facilement, par la veine coronaire, jusque dans l'oreillette droite d'où elle s'écoulait dans un vase. Je fis verser dans le péricarde une demi-once d'eau légèrement acide. D'abord l'eau injectée ne donna aucun signe d'acidité; mais il suffit de cinq à six minutes pour qu'elle en présentât des traces non équivoques. Le fait était donc évident pour les petits vaisseaux morts; quant aux petits vaisseaux vivans, je n'avais pas besoin de recourir à de nouveaux essais, ni de sacrifier de nouveaux animaux. Les expériences que j'ai consignées dans mon mémoire sur *les organes de l'absorption dans les mammifères*, ne laissent aucun doute à cet égard, d'après le jugement de l'Académie elle-même."

The physiological conclusions from these facts, are given in the following words:—

" Il me parait donc hors de doute que tous les vaisseaux sanguins, artériels et veineux, morts ou vivans, gros ou petits, présentent, dans leurs parois, une propriété physique propre à rendre

parfaitement raison des principaux phénomènes de l'absorption. Affirmer que cette propriété est la seule qui les produise, ce serait aller au delà de ce que commande une saine logique; mais du moins, dans l'état présent des faits, je n'en connais point qui infirme cette explication: ils viennent tous, au contraire, se ranger d'eux-mêmes autour de ce fait principal."

The practical applications which may be made of these conclusions, if they be admitted as correct, are numerous. We can now explain, in a more satisfactory manner, the cure of certain diseases; and will probably direct our attention to the mechanism of absorption in their treatment. For even in one only of the facts which Dr. Magendie's experiments go to prove, namely, that the more distended the blood vessels, the less active will be the absorption,—a fertile source is laid open for numerous curative indications.

ART. III. *Note sur un nouvel, &c.—On a New Mode of Preparing the Extract of Opium.* By M. ROBIQUET, Professor at the School of Pharmacy, in Paris.

The nauseating principle of opium, says the author, has but a small share in the effects which that substance produces on the animal economy. It is now a well established fact, that those effects are the result of properties peculiar to the two principles recently discovered in opium, the "narcotine" and the "morphine."

It results from Dr. Magendie's experiments, that the former acts on the animal system as a stimulant, or rather as an irritating substance; while the latter is the real anodyne, and that which induces calm sleep. The presence of two such opposite principles in opium, is, by Dr. Magendie considered as the cause of the variable effects which that drug is known often to produce.

The "narcotine" is the salt which Derosne discovered some years ago, and which led to the subsequent and more recent detection of "morphium;" and if that principle be the obnoxious one, which it is desirable to separate from the common extract of opium, any method of accomplishing that object in an effectual manner, will be received with gratitude. This method M. Robiquet has the merit of suggesting.

"Make a solution of opium in cold water, in the same way as if the aqueous extract were to be prepared. Filter and evaporate to the consistence of a thick syrup, which is to be

treated in appropriate vessels, by rectified æther, taking care to shake the mixture repeatedly before decanting the æthereal tincture. The latter is then distilled, to separate the æther, and the operation repeated by adding fresh æther, and re-distilling as long as any crystals of 'narcotine' are obtained by the distillation. The solution of opium is then evaporated to the consistence of extract, which is preserved for use.

ART. V. *Experience sur la rage.* BY F. MAGENDIE.

This short paper is full of interesting matter. In opposition to the numerous contrary assertions, Dr. Magendie contends, that none of the substances hitherto recommended as remedies against hydrophobia, and introduced into the stomach, can exert the smallest influence on that disease. He grounds his opinion upon several experiments made by himself and others, in which some of the strongest narcotics, short of the *pure* prussic acid, have been not only introduced into the stomach, but thrown into the vortex of circulation, by injection through the veins, without any apparent salutary, or even calming effect. The author succeeded, in conjunction with Dupuytren, in injecting into the jugular vein of a young man attacked with hydrophobia, eight grains of the aqueous extract of opium, without any apparent result. Hydrophobic dogs have been known to admit the introduction even of the medicinal prussic acid, without any symptom of diminution in the disease. Must we, then, renounce altogether, to the possibility of curing this terrific malady? The result of the following experiment would seem to warrant a different conclusion. A dog, which exhibited the most violent symptoms of rage, was put at the disposal of Dr. Magendie, by its master. The Professor, with the assistance of some resolute pupils succeeded, with great personal risk, in securing and muzzling the animal. He then took 16 ounces of blood from the left jugular vein, and substituted to it 60 ounces of water at 85°. During the progress of the injection, 10 or 12 ounces more of blood mixed with water, escaped from the superior opening of the vein. After the operation, the animal appeared perfectly calm, laid itself down, as if to sleep, and, in about five hours, died; having, during the whole of that period, remained in the most tranquil state. On examining it after death, no lesion of the encephalic system could be traced; nor any sign of disease in the digestive organs. The salivary glands were larger than usual, and of a

red colour. The pulmonic texture was completely filled with aqueous blood; the trachea and bronchia were full of a brownish froth, and their mucous membrane was inflamed.

In the course of this paper, the author states, in a note, that he and Dr. Breschet inoculated a dog, with the saliva of the young man ill with hydrophobia, of whom mention has been made above, and that the animal became enraged in about a month. Two other dogs, that were bitten by the former, became likewise hydrophobic; but on the latter attacking other dogs, no morbid effects ensued. The action of the hydrophobic poison, therefore, seemed completely annihilated at the third generation.

ART. XI. *Memoir on the Structure of the Lungs in Man, and on the Modifications which that Structure undergoes at different periods of life; with some Remarks on the Origin of Pulmonary Consumption.* By F. MAGENDIE.

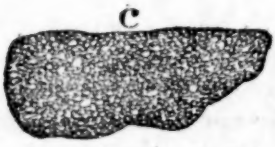
THIS paper deserves the immediate attention of the profession, from the importance of its ultimate object; but we have only room for a detail of that part of it, which relates to the mechanical structure of the lungs.

With a view to obtain an accurate knowledge of the texture of the lungs, Dr. M. partially fills them by insufflation with air, after their removal from the dead subject, and in that state, allows them to dry, either before the fire, or in the open air. When quite dry, this sort of preparation is nearly transparent. and may be readily cut into thin laminæ or slices, with a very sharp knife. If one of these laminæ be placed between the observer and the flame of a candle, or the light of day, the pulmonary cellules will be easily perceived. These cellules do not appear to be arranged in any methodical manner—nor to have membraneous parietes. They seem solely formed by the minutest and last ramifications of the pulmonary artery,—the *radiculæ* of the veins of the same name, which are a continuation of the former—and lastly, by the numerous anastomoses of all these vessels. These cellules are separated into many distinct lobules, in each of which, the cellules communicate among themselves; while between the lobules there is no sort of communication.

The number of cellules is in an inverse ratio to the age of the subject; consequently, the older the person, the larger is each cellula, or what comes to the same thing, the fewer are the cellulæ.

The diagram (a) inserted in the margin, is intended to represent a *lamina* of the lungs of a child, eight days old, prepared in the manner above mentioned, and placed between the eye and the light;

The next marked (b) is a just representation of a similar *lamina* of the lungs of an individual, aged twenty-two years;



While (c) and (d) offer correct representations of *laminæ* of the lungs of individuals at the respective ages of fifty five and seventy years.

The diagrams will present a better delineation of the number, arrangement, and outline of the cellulæ, if seen through a magnifying glass.

It follows, therefore, that the lungs become superficially lighter as we advance in life; and in support of the correctness of this inference, Dr. Magendie states that he found, by actual experiment, that, under equal volumes, a portion of the lungs of a man at seventy was fourteen times specifically lighter than that of a child a few days old.

We have no room for inserting the practical remarks which actually suggest themselves, on the perusal of the preceding important observations.

ART. XIII. *Recherches Anatomiques, &c.—Anatomico-Chemical Observations on a Case of Chronic Hydrocephalus.* By G. BRESCHET, chef des travaux anatomiques, &c.

EVERY information from the hands of Dr. Breschet is valuable, and merits attention. There is not, perhaps, a more indefatigable, nor a more scientific anatomist among the rising generation of philosophical inquirers; and the place he fills at the Faculty of Medicine in Paris, with so much credit to himself, and advantage to his pupils, affords him many opportunities for the improvement of pathological knowledge.

In the presentinstance, Dr. B. gives the result of his examination of a subject, seven years of age, who died in one of the wards of the "Clinique Interne," from the disease mentioned in the title.

We can only extract the following few leading facts. The head measured 31 cent: in circumference—19 cent: from the root of the nose to the external occipital protuberance—and the same from the centre of one parietal bone to that of the other. The cranium was ossified, except at the anterior fontanelle, which was 7 cent: wide, and 3 cent: long. The cerebral substance was in contact with the cranium, and offered no trace of convolutions. The distension of the anterior lobes was very considerable. The lateral and third ventricles contained 3lb. of water. Their internal surface was smooth, and exhibited several blood vessels diverging from the corpora striata to the anterior part of the hemispheres. The cerebral mass altogether weighed 3½lb. while in another child of the same age, it was found to weigh about 3lb.

The fluid was clear and limpid, and consisted of

Water	990.
Albumine	001.5
Matter like Osmazome	000.5
Hydrochlorate of Soda	006.5
Phosphate of Soda	000.5
Carbonate of Soda	000.1

We have had occasion to examine, some months back, at the request of Mr. Sewell, assistant Professor at the Veterinary College, a child who died, the evening before, of a complaint similar to that described by Dr. Breschet. The summary appearances in this case, were as follows: Horizontal circumference of the head, in its widest part, 26 inches. Parietal diameter, 9 inches: Occipito-frontal diameter, 13¾: Distance from the root of the nose to the external occipital protuberance, measured by a line passing along the vertex of the head, 20½ inches. The bones were perfectly ossified, excepting at the anterior fontanelle, which presented a distance between the parietal bones of one inch and three quarters in length, and $\frac{1}{10}$ of an inch in width. The fluid contained within the ventricles weighed 72 ounces, it was transparent, colourless, and unmixed with any floating coagula, or concrete fragments of lymph. The cerebral mass being detached from the cranium, and emptied of its fluid contents, weighed 52 ounces; but having been immersed in a strong solution of oxymuriate of mercury for upwards of nine months, at the end of

which time a total evaporation of the solution had been suffered to take place, by exposing the vessel to the open air,—the mass became contracted and perfectly hard, having preserved its external characters, and the original form of its outlines, although on a much more diminished scale, the whole of it barely weighing eight ounces. The few superficial experiments we made with the fluid contained in the ventricles, enabled us to ascertain that it had no smell, that neither lithmus nor turmeric paper announced the presence of either free acid or alcali, that its specific gravity was to that of water :: 1.0081: 1.—that it did not coagulate by heat, but that on the application of Berzelius' test, it gave signs of a minute quantity of albumine. The residue, after evaporation, was burnt, and gave out ammonia, carbonic acid gas, &c. On adding distilled water, and treating it with nitrate of silver, a copious white and solid precipitate, soluble in ammonia, was obtained.

We beg leave to throw out a hint to Dr. Breschet, and the other anatomists who may have opportunities of witnessing cases of hydrocephalus internus like those described in the present article,—whether the disease be not greatly influenced, if not altogether induced, by an unnatural disposition of the internal carotid, which in two other cases examined by us, was found to be considerably shorter than usual, and almost wholly without any of those violent contortions which are commonly observed in that artery before it enters the skull. We can easily conceive, that, under such a disposition of the principal blood vessels supplying the brain, the *quantum* of blood entering that organ, at a given time, as well as its *momentum*, must need be much more considerable than where the wise disposition of nature obtains, as in the majority of cases, of checking the torrent of the circulation towards an organ of so delicate a texture, by forcing it to travel through an extended channel, rendered more intricate by the number of its contortions.

History and Method of Cure of the various Species of Palsy; being the first part of the second volume of a Treatise on Nervous Diseases. By JOHN COOKE, M. D. F. A. S. Fellow of the Royal College of Physicians, and late Physician to the London Hospital. Octavo, pp. 215. London, 1821.

(From the Medico-Chirurgical Review for March, 1821.)

ERUDITION and talent, when confined to the individual, are nearly as useless to the community at large, as though they did not exist. They are like a river that takes a subterraneous course, and is known only to its own dark and solitary channels. But when they are made subservient to the general diffusion of knowledge, through the medium of the press, they are like a river winding beneath a fervid sun, through a thirsty country, whose branches irrigate the surrounding plains, permeate the arid soil, and scatter fertility over the face of nature. There is, moreover, in the intellectual, as well as in the physical world, a moral obligation imposed on the favoured few, to extend a portion of the fruits of their endowments and acquirements to the indigent many—an extension which, in the medical profession particularly, is productive of the most beneficial consequences, not only to the profession itself, but to society at large.

The annals of medicine, ancient and modern, pregnant as they are with the most valuable information, are yet, from their vast extent, and the languages in which they are recorded, almost completely inaccessible to nine-tenths of medical practitioners. Hence it is, that the great mass of medical society enter on the actual duties of their profession with but a scanty stock of medical lore—namely, that which they have hastily noted down in the lecture room—picked up during the hurried movements of hospital practice—or purchased, on leaving the seats of education, in the shape of a few STOCK BOOKS, as they are not inaptly termed by the bibliopolists.

Now we are far from censuring this state of things, for really we know not how it can be otherwise under existing circumstances. But we are clearly of opinion, that the man who, selecting some important class of diseases, lays open to us the stores of information, ancient and modern, collected or recorded on that particular subject—and that in a form and language accessible to all ranks of the profession, performs a

great service to the rising generation—aye, and to no small portion of those who consider themselves *melioris notæ* in the republic of medicine. This is the task which Dr. Cooke has undertaken, and his qualifications to execute it are acknowledged by all. His object appears to have been, to extract useful matter, on the subject of which he treats, from all the authors of reputation, of whatever age or country, and thus to communicate their sentiments in plain and perspicuous language. In the present publication our learned author has clothed the matter more in his own words, than in the former volume; and by so doing, he has endeavoured, in several instances, and that with success, to render diffuse passages succinct, and obscure parts of the subject more intelligible. Although Dr. Cooke's work is professedly a compilation, yet he has, on almost all occasions, as we shall show in the sequel, introduced his own opinions and experience; and where he has not presumed to decide between jarring doctrines and modes of treatment, he has almost uniformly stated what he himself would be inclined to adopt or pursue, in such circumstances. The utility of this proceeding is so obvious, that it is quite unnecessary for us to dilate upon it. The original communications which our author has received from his friends, particularly Dr. Philip, Mr. Charles Bell, Mr. Cooper, and others, must necessarily enhance the value of the publication; and with these few preliminary remarks, we shall proceed to lay before our readers a brief analytical sketch of the work itself, which we doubt not will substantiate the justness of the preceding observations, and induce our readers to cultivate a much closer acquaintance with the original.

This *first* part of Dr. Cooke's second volume contains seven chapters and an appendix, viz. on the general *history* of palsy, hemiplegia, paraplegia, and paralysis partialis—on the the *causes* of palsy—diagnosis and prognosis—and on the *treatment* of the disease. The appendix consists of an abstract from the minutes of the Army Medical Board, and an official return of cases of paralysis and apoplexy in the British forces, during a period of six months.

It is not a very easy task to present a connected view of so great a mass of excerpted opinions and observations, especially as the author has rendered the language terse and condensed by the method which he has adopted. Yet as many hundreds of our readers can never have access to the original, we shall endeavour to run a slender *line* of analytical de-

lineation parallel with the great *chain* of the work itself, by which means a degree of communication between its parts may be preserved, and an *ex pede herculem* sample of the publication exhibited.

After detailing the *definitions* of ancient and modern authors, Dr. Cooke thinks, and we believe justly, that the following sentence may comprehend the chief characteristics of palsy.

"It is a disease in which there is a diminution, or an entire loss of the power of voluntary motion, or of sensation, or of both, in some particular part or parts of the body, without coma." P. 3.

Our author remarks that he has generally found the precursors of palsy to be the same as of apoplexy; namely, vertigo, drowsiness, partial head-ache, numbness or torpor, loss of memory;—and more especially as forerunners of *palsy*, he has observed "a faltering inarticulate voice, drowsiness, a slight delirium, dimness of sight, or double vision, trembling, a numbness gradually ascending to the head, frequent yawning, weakness, distortion of the mouth, and disposition to faint."

"Palsy chiefly consists in the loss of the power of voluntary motion. for sensation in a greater or less degree generally remains; nay, in certain cases, it is morbidly increased. I have seen several instances in which paralytic persons have felt very violent pain in the parts affected, particularly in the shoulder and arm. These remarks might be confirmed by quotations from various authors.—I never saw a case of palsy in which sensation was entirely lost; and an eminent physician of great experience asserts that a total loss of feeling in this disease is extremely rare." 5.

The vital and natural functions are generally but little affected in palsy. The opinion is very commonly received that the temperature of paralytic parts is below that of health. Dr. Abercrombie is of different sentiments. He thinks, that the power of preserving a medium temperature is partially lost by paralytic limbs, so that they are more heated when exposed to heat, and more chilled when exposed to cold, than parts in a state of health. He illustrates this by the following fact:—

"A medical gentleman, on visiting a paralytic patient, was astonished to find the paralytic arm so intensely hot that he could not touch it. He was at first very much surprised; but found, upon inquiry, that the patient had, by the advice of a friend, applied to the arm a quantity of very hot bran, or something of that kind very hot, which had been removed a short time before his visit." 8.

Dr. Cooke remarks, that if this were generally the case, the temperature of paralytic parts ought to be always less than that of other parts, in these climates where the medium temperature of the air is far below human heat. Paralytic limbs

often grow more soft and flaccid than natural, as well as wasted, and sometimes œdematous. Mr. Charles Bell informs our author that he has observed the nerves themselves, in such cases, lose much of their substance.

In this unhappy class of complaints, the energies of the mind are often much weakened—the memory especially, is much impaired—sometimes partially so; curious examples of which are quoted from Galen and others.

"The passions of the mind are sometimes greatly affected by palsy. Persons naturally mild and placid, have become peevish and irritable under its influence; and sometimes a change of an opposite nature has been caused by it. I had several years ago an opportunity of seeing an illustration of this remark, in the case of a much respected friend The person to whom I allude, had always up to an advanced age, shown an irascible and irritable disposition; but after an attack of palsy, his temper became perfectly placid, and remained so till his death, about two years afterwards." 12.

In persons recovering from palsy, Dr. Cooke has often observed, that the parts most distant from the head are first restored. In hemiplegia it almost always happens that the leg recovers its power long before the arm. Our author adopts Dr. Cullen's nosological division of the disease into hemiplegia, paraplegia, and partialis.

I. *History of Hemiplegia.* This term does not occur in the writings of Hippocrates, Galen, or Aretæus. Paulus Æginета appears to have been the first to designate this species of palsy. It is preceded, in a great proportion of cases, by apoplexy, but sometimes so slight as to escape notice. Dr. Cooke here brings forward a great number of hemiplegiac anomalies, if he may use the term, as well calculated to illustrate the history and nature of the diease. For these we must refer our readers to the work itself, from page 18 to 32.

"Hemiplegia sometimes terminates in a few days, but much more frequently the progress towards recovery is very slow. It often happens that an amendment to a considerable degree takes place, and then the disease remains stationary for months, or even for years: thus we frequently see persons, who have been attacked by hemiplegia, so far recovered as to be able to walk in an imperfect manner, one leg being dragged, with the foot turned out, without making any material further progress towards the healthy state." 33.

In some cases, however, the patient makes no improvement, is confined to bed, and dies gradually exhausted—"raro ad sanitatem superveniunt, et plerumque miserum spiritum trahunt, memoria quoque amissa." *Celsus.* The most distressing state, as Dr. Heberden observes, of this disorder, is that in which the powers of the mind are in the highest degree debilitated; and the passions become ungovernable, leading al-

most to madness, so that a person survives himself, as it were, and is reduced to a state of the utmost misery, if conscious of it—being unable to stand, to speak, to feed himself, or to retain the fæces or urine, yet continuing thus to live, a burthen to himself and all his friends.

II. *Paraplegia.* In this species of palsy, the superior parts of the body are seldom affected, unless the causes are seated in the upper part of the spine. Galen appears to have been aware of this fact.

"If the spinal marrow, he says, be affected about the fifth vertebra, the hands will be wholly deprived of sense and motion; if about the sixth, the paralytic affection of them will be more partial, &c. and if below the eighth, they will not be affected at all." 37.

The paraplegia depending upon a diseased state of the spine and its connexions, is by far the most frequent. It is produced sometimes by mechanical injuries; but more generally it takes place gradually and constitutionally, especially in children.

"This disorder generally comes on slowly, and is preceded by languor, listlessness, and weakness in the knees. As it advances, a difficulty in properly directing the feet is experienced, and an involuntary crossing of the legs, with frequent tripping or stumbling are observable, and the legs or thighs are found to have lost a good deal of their sensibility, and to have become useless for the purposes of motion. When an adult is the patient, the progress of the distemper is much the same, but rather quicker." 39.

The paraplegia depending on an affection of the brain has been pointed out by Dr. Abercrombie, and more recently by Dr. Baillie, as we showed in our last number. Dr. Cooke has seen some cases where paralytic affections of the arms were occasioned by some complaint in the head; but does not recollect to have seen, in an adult, a loss of power in the lower extremities from that cause, and marked by the train of symptoms described by Dr. Baillie, whose accuracy of observation, however, is unquestionable. The anomalies of this species are very few, and only one is introduced, communicated by Dr. Hutchinson: but dissection not being allowed, the case is imperfect.

III. *Paralysis Partialis* is that species which affects less than half the body—or some one particular part or organ. They may be considered as consisting in a want of sensation or of motion. Examples of the *first* we see in paralytic affections of the olfactory nerves, retina, gustatory nerves, auditory nerves, and nerves of touch:—of the *second*, in want

of motion in the eye-lids, muscles of deglutition, organs of speech, urinary bladder, or in particular parts from the effects of lead. The vital organs are rarely affected in this way, being carefully guarded against such accidents, not only by the situation of the nerves of these organs, but by their own inherent powers.

After enumerating and exemplifying the various kinds of partial palsy, Dr. Cooke briefly notices the question often agitated by physiologists, how it happens that *motion* is sometimes lost, while *sensation* remains, and *vice versâ*, if both functions are performed by the same nerve? The question puzzled Galen, as it had done Erasistratus and Herophilus long before him. It has since puzzled Forestus, Haller, Van Swieten, Sauvages, &c. Recent physiologists seem to have abandoned the hope of a solution. We shall introduce, however, the sentiments of two living authors of the present day.

"Dr. Wilson Philip, in compliance with my request, has given me his opinion upon it. Dr. Philip, who has carefully studied the nervous system, says, 'I think we must admit that the bundles of nerves, going directly from the brain or spinal marrow to any part of the body, contain nerves of two descriptions, one set adapted to convey the dictates of the will, the other to convey impressions from the part to the sensorium. This I think more probable, than that impressions move backwards and forwards in actually the same channels: one of these opinions must be correct. If the former is so, there is no difficulty in accounting for the feeling being lost, and the power of motion remaining, and *vice versâ*. Indeed these phenomena of disease seem to me to go some way towards proving the former opinion. These observations may perhaps be applied to all nerves; but in other respects the ganglion nerves seem to obey laws very different from those which come directly from the brain and spinal marrow."

"Mr. Charles Bell, whose physiological opinions deserve great attention, has also, in compliance with my desire, favoured me with his sentiments on this question. 'The nerves of sensation and motion,' he says, 'are bound together in the same membranes, for the convenience of distribution; but there is reason to conclude that they are distinct through their whole course, and as distinct in their origin in the brain, as in their final distribution to the skin and muscles; why then should we suppose that they are similarly affected in diseases of the brain. Even nerves of the same class, viz. the nerves of voluntary motion, are not affected in the same degree by disorder of the brain. When there is effusion upon the membranes of the brain, from excessive inebriety, or dropsical effusion of any kind, the muscles are influenced unequally; and it is

remarkable that those muscles, and consequently those nerves, which are immediately under the influence of the will, are first affected or debilitated in the greatest degree, where there is a general disturbance of the brain. The slighter disorders affect the muscles of the eyes; in a greater degree, we shall see palsy of the face; in a still greater degree, we find the muscles of the limbs unequal to their office. The muscles of respiration are next affected; and the fibres of the hollow viscera retain their office whilst there is life. If nerves of voluntary motion are thus differently affected according to the distinction of their functions, we need not be surprised that nerves, in all respects so distinct as those of motion and sensation, should be differently affected by what appears to us a general and uniform affection of the brain." 58

Dr. Cooke justly remarks upon these opinions that, until we can demonstrate the distinction between the nerves of sense and nerves of motion (excepting in the eye and tongue where the distinction is evident) the question must be considered as involved in great obscurity, although the analogies abovementioned are certainly greatly in favour of different sets of nerves for the two different functions.*

IV. *Etiology.* Some of the principal *predisposing* causes of palsy must be the same as those of apoplexy, enumerated and explained in Dr. Cooke's first volume, and treated of in this Series, *No.* I. *p.* 4 *et seq.* and the same may be said of the *exciting* causes. With the exception of paraplegia, paralytic affections, in general, occur in advanced age, especially in constitutions weakened by disease. Dr. Gordon's report from the Army Medical Board states, the chief exciting cause of apoplexy and palsy among the military to be, intoxication, exposure to the sun, drinking cold water, and bathing in the same—and that a predisposition to the disease is laid by long continued attacks of fever, visceral diseases, epilepsy, and dysentery. The hemiplegic form being almost invariably preceded by an apoplectic fit, of greater or less duration or violence, "the causes, therefore, of both are the same."

Dr. Cooke details at considerable length the experiments of Dr. Serres, of whose pathological researches we gave a

*May not the function of a nerve depend upon the peculiarity of its structure where it *terminates* in an organ; as in the liver, where it regulates the secretion of bile; in the pancreas, the pancreatic secretion; in the kidney, the urine, &c. We can discover no difference of structure in nerves going to different organs: one nerve sometimes distributing branches to organs of very different function. May not therefore the arrangement of the nervous filaments in the skin and other sensible parts, be peculiarly adapted for the function of sensation, without supposing the necessity of two different sets—one for motion, the other for feeling?—*Rev.*

full account in our eclectic article on apoplexy. Of the *experiments*, however, we did not give an account, because we did not deem them quite conclusive, and we are glad to see that Dr. C. appears of a similar way of thinking. Indeed, he introduces a series of observations on this subject, which we are tempted to extract rather than abbreviate.

"The observations of M. Serres, and the facts which he has adduced, are highly worthy of our attention; and great credit ought to be given to him for his diligence in improving the peculiar opportunities for information which he enjoyed; but I think the conclusions which he has drawn from his reasoning are too general, and by no means strictly logical. He states, that he has, in many instances, thrown blood upon, and into the meninges, the cavities, and the substance of the brain, without producing apoplexy, or even somnolency; that upon the examination of a very great number of persons after death from apoplexy, he has found the meninges bearing evident marks of irritation (inflammation), accompanied with effusions of various kinds, and in various situations within the cranium; that sometimes he has observed the brain itself to have been injured in its substance, but without effusion: that in the former cases he has ascertained the preceding apoplexy to have been simple; and in the latter combined with palsy; and that he has known many cases of apoplexy without effusion, and of effusion without apoplexy; and hence he concludes that he has overturned the doctrine of apoplexy and palsy from pressure, and has established a better system respecting the distinctions and nature of the diseases, than any hitherto presented to the world: but the accuracy of one of these conclusions, at least, may, I think, be reasonably doubted.

"If M. Serres chooses to denominate those apoplexies *meningeal* in which the meninges appear to have been diseased, accompanied with effusion, the brain being in a sound state; and those *cerebral* in which there is no effusion, but the brain itself is disordered; if M. Serres chooses to make this division of the disease, I see no objection: perhaps it is better than that of sanguineous and serous. But, though physiologists may approve of his distinctions, I much doubt whether they will be disposed to admit that he has overturned the doctrine of apoplexy and palsy from pressure.

"He has shown that blood has been effused in various situations within the cranium, without apoplexy; but he cannot hence fairly conclude that effusion never produces the disease. Since he admits that there is effusion in the meningeal apoplexy, how can he prove even allowing it to be the consequence of what he calls irritation of the meninges, that the irritation, and not the effusion, is the immediate exciting cause of the disease! If compression by fluids were the cause of apoplexy, M. Serres says there could be

no apoplexy without effusion; but the want of logical precision here is evident, unless we grant, what I believe few physiologists would admit, that compression from fluids is the *only* cause of the disease. That some degree of pressure may be made on the brain without producing either coma or apoplexy, may be conceded as proved by M. Serres' experiment; but it by no means follows that a different or greater pressure would not produce these diseases; indeed, both observation and experiment decidedly show, that compression does sometimes, according to its degree, give occasion, first to somnolency, and then to complete apoplexy. It is a fact perfectly well known, that after the operation of the trepan, pressure on the part deprived of cranium produces these effects: and innumerable instances might be adduced in which compression by depressed bone after accidents, has given occasion to coma and apoplexy.

"These observations are confirmed by direct experiments, which lead to positive conclusions; not to negative conclusions, like those of M. Serres. M. Portal trepanned the cranium of a dog; he compressed the dura mater and the brain, sometimes with his fingers, and sometimes with a bouchon of linen or of wood, and sometimes by water or mercury poured through the cavity made in the cranium. A funnel was adapted to the opening of the cranium, which was filled with water or mercury; so as to produce a graduated compression, more or less strong, upon the brain. In whatever way the experiment was made, it instantly produced the following effects—The animal ceased to bark; if the compression was increased, it became agitated by strong convulsions; if still further increased, a profound sleep took place, the convulsions ceased and the respiration became stertorous. If the pressure was diminished, the breathing became more free, and the convulsions returned. This experiment was very often repeated by M. Portal, and always with the same results, except where the compression of the brain had been so strong, that its substance had been weighed down, *affaissée.*[*]

"Mr. Astley Cooper has been kind enough to give me an account of an experiment which he made upon a dog, with a view to ascertain what degree of pressure the brain could bear; which in part confirms M. Portal's experiment. He trepanned a dog, and detached the dura mater in a circle from the inner table of the skull, to the extent of half an inch. He then pressed upon the dura mater, so as to depress it about the fourth part of an inch, and the dog exhibited no signs of uneasiness He then pressed upon it half an inch of depression, and the animal showed great signs of uneasiness, endeavouring to escape from his grasp with all his efforts: he then pressed to three quarters of an inch, and the animal became torpid, breathed laboriously, and according to the declaration of Mr.

[*] Portal, Cours de Physiologie Experimental, p. 248.

Davie, who assisted him in the experiment, the pulse became slow and irregular. Suddenly he removed the pressure, and in half a minute the animal started from the table, turned several times round, as if giddy, and then staggered away." 88.

Keeping these observations in view, our very able author properly asks if, in a case of apoplexy, preceded by the usual symptoms, we should find *post mortem*, a quantity of blood effused, without any other disease, (many instances of which are on record) would it not be reasonable to conclude that the effused blood first produced vertigo or somnolency, and afterwards, by its increase, a complete fit of apoplexy?—We would answer, yes. Our author thinks, perhaps justly too, (although against our own creed) that we err both in attributing apoplexy *always* and *never* to pressure, as physiologists of opposite systems have done. Dr. Cooke has no doubt, however, "that in the generality of cases, apoplexy is produced by general, and palsy by partial compression. In this sentiment we fully coincide.

From hemiplegia, our author comes to paraplegia, and partial palsy. Paraplegia, he observes, in a great proportion of cases, is produced by morbid affections of the spine and its connexions, coming on slowly, and depending upon a constitutional disease. The cause is also sometimes seated in the head, as shewn by Dr. Baillie, Dr. Abercrombie, and others.

"A diseased state of the spine, and its connections, commonly produces paralytic affections of the lower extremities; but if the injury be in the lower parts of the vertebral column, the muscles of the superior extremities sometimes are also affected, and even general palsy may be thus produced." 93.

The causes of partial palsies are numerous and various—sometimes seated in the head—sometimes the spine—sometimes, and Dr. C. thinks most frequently, in the nerves themselves. This disease occasionally depends on inflammatory action in the brain, or in the paralized parts, often accompanied with pain. The two following cases communicated by Dr. Abercrombie and Mr. Charles Bell, we shall insert here.

"Dr. Abercrombie, in his communication to me, describe as case of much paralytic disease from a circumscribed morbid cause in the head. 'A gentleman aged thirty-three was seized with numbness and slight palsy of the left side, the numbness affecting also the left side of the face, the line being drawn with the utmost

precision along the centre of the nose. He had no head-ach, and the pulse was natural. He was largely bled, and the affection went off in a few days; but from this time he was observed to be less acute in business, his memory was impaired, and he sometimes complained of his head. After three months he was observed one day more confused and forgetful than usual, and in the night was seized with perfect apoplexy, which was fatal in twenty hours. On dissection every part of the brain was found in the most healthy state, exept that in the centre of the right corpus striatum there was an abscess regularly and nicely defined, no bigger than would have contained a small pea. In the lower part of the left corpus striatum there was a more regular suppuration of great fætor extending over a space about the size of a small bean. There was no serous effusion, and no other morbid appearance of any kind.

" Mr. C. Bell has described to me a case of partial palsy, with great debility, preceded by inflammation of a nerve, accompanied with excruciating pain. In this instance the inflammation was in the ulnar and fibular nerve, and the pain, which was of the most agonizing kind, had confined the patient for two years, and had quite subdued a powerful frame. He had in vain sought relief, says Mr. Bell, from some of our most distinguished friends, and he was left in a state of despair. Observing that the pain was confined to certain parts of the hands and feet, and that a distinct class of muscles were become paralytic and shrunk, Mr. Bell's attention was directed to the corresponding nerves, and he found them tender and acutely sensible to the slightest pressure. The accessions of pain were periodical and alternating, the feet being generally first attacked, and afterwards the hands. By repeated purging, and the application of leeches along the course of the nerves, together with other remedies to be described when I speak of the treatment of partial palsy, this patient was restored to health." 98.

Mr. Bell includes among the causes of partial palsy, long-continued exercise of particular muscles, or violence done to them—also irritation in the bowels, especially among the children of the poor. We saw a few years ago, an officer of rank, who always lost the power of speech, and sometimes of sight, whenever the gastric, biliary, and intestinal secretions were much disordered. We have repeatedly seen him become speechless in the middle of his dinner, when he could only make signs to his surgeon, who, on those occasions, gave him what this officer used afterwards facetiously to call the "doctor's thunderbolts," namely brisk purgative pills of calomel and extract of colocynth, which invariably dissipated the paralytic affection, as soon as they began to operate.

Here our author notices the fumes or effluvia of metals, particularly lead, as well known causes of partial paralysis. Dr. Cooke was lately consulted by a gentleman who had a paralytic affection of one side of the face, without any assignable cause. On inquiry, however, it was found that he had slept two or three nights in a room where the bed was placed near a closet, the door of which had been recently painted, what is called a dead white. The external application of lead even in its metallic form, has occasioned palsy.

"A person a few years ago was admitted into St. Bartholomew's Hospital, under the care of Dr. Powell, who was affected with palsy from this cause in a very extraordinary degree. The patient, who was a painter was totally regardless of cleanliness in his business, and was in the habit of wiping his brush on the sleeves of his coat, so that he was particularly exposed to the fumes of the paint which he used. In this case, not only the hands of the patient were paralytic, but also the lower extremities, and the sphincter muscles of the bladder, so that he could not retain his urine." 104.

We must here pass over a great deal respecting the etiology of the disease under consideration, and also much interesting matter collected from various quarters respecting that curious phenomenon in palsy, namely, the opposite sites of cause and effect—the one being almost invariably seated in the right side when the other is in the left, and *vice versâ*. Of all the explanations hitherto given, that of the *decussation of nerves in the brain*, particularly in the tuber annulare, though not satisfactorily demonstrated, appears to our author to be the most probable.

V. *Dissections*, *Diagnosis*, *Prognosis*. The *Post mortem* appearances in palsy very much resemble those after apoplexy which have been described in Dr. Cooke's first volume, and also in the first No. of this series of our Journal. In this publication, however, Dr. Cooke has given a neat account of the pathological investigations of M. Serres, Riobe, Rochoux, and other late continental writers, with whom our readers are pretty familiar from the extracts we made in our article on apoplexy. The diagnosis, as our author remarks, is so clear that there can be no danger of confounding this disease with any other.

On the subject of PROGNOSIS there is much variety of opinion. The ancients, in general, considered palsies of long standing as incurable. Dr. Abercrombie, however, takes a

more encouraging view of the subject, and thinks we have probably been too much in the habit of considering paralysis of long standing as depending on fixed and irremediable disease of the brain. Many cases, he observes, are on record, which lead to shake this opinion—some recovering very gradually, and, in a few weeks or months, leaving no trace of the disease. Dr. A. has not given us any marks by which we can discriminate these favourable from the more unfortunate cases. We fear that the following prognosis of our able author will prove too rigorously correct.

"As far as my own experience enables me to judge, the prognosis in the general palsies, must be almost always unfavourable. I have seen many cases of recovery from palsy in a very considerable degree; but I do not recollect more than one, or two cases, of a complete restoration, both of sensation and motion, in the whole of the side of a person who had been affected with a perfect hemiplegia When this species of palsy depends upon an injury done to one side of the brain, which is almost always the case, I am inclined to think that the mischief is seldom, if ever, entirely obliterated, and the disease wholly removed. On the dissection of persons after palsy, either evident disease is found in the brain or marks of the existence of former disease, which had given occasion to the complaint; and although Messrs Rochoux and Riobé have adduced good reasons for believing that fluids effused have been absorbed, and that cavities in the brain have been sometimes closed, yet the mischief may not have been completely removed, nor the brain perfectly restored to its healthy state; and whilst any morbid cause capable of producing palsy continues in any degree to exist, it is natural to imagine that palsy in some degree would remain. Reasoning from appearances after death from palsy, would lead us to conclude that the disease almost always, in a greater or less degree, does remain. Instances may, no doubt, be adduced of perfect recovery from palsy; but I am persuaded that such are of very rare occurrence. If persons affected with hemiplegia do not become apoplectic in a short time, it often happens, that after a certain degree of amelioration, the disease becomes stationary, or very gradually proceeds, even for several years, before it terminates fatally." 130.

VI. *Treatment* Our author enters first on the treatment of *hemiplegia*, the most common and the most important species of the disease. This species, as was before observed, being, in a great proportion of cases, the consequence of apoplexy, the means both of prevention and cure, must be nearly the same in both:—indeed they differ chiefly in degree. We shall pass over the preventive measures which are judiciously

stated by Dr. Cooke at pages 131-2-3 of the work. On the actual accession of the disease, the measures must be nearly those employed in apoplectic seizures. Dr. Cullen was of opinion, that in hemiplegia of any standing there is probably either sanguineous or serous effusion. M. Serres almost always found a quantity of blood in cavities of the brain, produced by injuries done to that organ. Supposing then that pressure on the brain is the operating evil, the removal or diminution of that pressure is clearly our object,—and this can only be effectually attained by blood-letting, purgatives, emetics, diaphoretic sialagogues, revelents, and discharges by means of blisters, issues, and setons. The ancients prescribed general and local blood-letting in this disease; and the moderns, who recommend the same measure in apoplexy, prescibe it in paralysis, but with caution. Those who doubt the propriety of bleeding in apoplexy, proscribe it wholly in palsy. Mr. Hunter was of opinion that in hemiplegia we ought to extract blood very largely, especially from the temporal arteries; and Dr. Abercrombie has published some cases illustrative of the success of this practice. The following are the statements of our author himself on this subject; and they are delivered with the cautious decision which marks the scientific practitioner.

"My own experience on this subject is in favour of the practice of blood-letting in hemiplegia, when accompanied with strongly marked apoplectic predisposition; and I do not recollect to have observed any mischief produced by it under such circumstances. I once, indeed, saw this species of palsy terminate in a fatal apoplexy soon after a free evacuation of blood, in the case of a gentleman seventy years of age, of a plethoric constitution, and free mode of living; yet I am convinced that bleeding, all circumstances considered, was in this case highly proper; nay, it is not very improbable I think, that by a still more copious evacuation of blood, the total abolition of sensation and motion might have been prevented. We have some cases on record, in which hæmorrhage from the nose, or from the hæmorrhoidal or menstrual vessels, have relieved persons affected by paralytic symptoms, especially when connected with the stoppage of the piles or the menses. With respect to the treatment of hemiplegia, as far as relates to the propriety of blood-letting, and the extent to which depletion by that means may be safely carried, it appears to me extremely difficult, if not impossible, with propriety to lay down any absolute general rules. Each individual case must be viewed in all its circumstances, and by a careful consideration of them, our practice should be regulated. Before we prescribe blood-letting in

hemiplegia, we must investigate the age, strength, general constitution, and habits of the patient, and above all, the actual symptoms of the disease. In early, or even in somewhat advanced life, if plethora and the various symptoms formerly enumerated as tending to apoplexy were present, I should not scruple to bleed freely, both generally and topically. On the contrary, in great age, debilitated, leucophlegmatic habit, dropsical tendency, &c. I should think it right to abstain altogether from this, and from every other powerful mode of depletion, unless there was an evident great determination of blood to the head, marked by flushing in the countenance, throbbing of the arteries, redness of the eyes, &c. In doubtful cases, indeed, the safest plan would be to evacuate blood only topically by leeches or cupping glasses, and to proceed as circumstances may direct, carefully watching from time to time the effects of the practice." 142.

There is much less caution necessary in the employment of purgatives in paralysis. "In all cases," says Dr. Cooke, "a free evacuation of the bowels is not only safe, but necessary." Boerhaave thought purgative medicines in certain cases, of more service than all others put together, provided the body could bear their power. Van Swieten and Fordyce are of nearly similar sentiments. Indeed all writers agree, as to the propriety of keeping the body open in hemiplegia; but that the cathartics should be suited to the nature of the case.

"The neutral salts and other purgatives called refrigerants, may be given where there is much determination of blood to the head, and in full habits; but in debilitated, leucophlegmatic, and dropsical cases the more stimulating purgatives, such as aloes, calomel, scammony, colocynth, jalap, &c. may with more propriety be administered." 143.

Our continental brethren lay much stress on stimulating glysters; and emetics are prescribed with less scruple in palsy than in apoplexy by the practitioners of the present day—in France they are much employed. Dr. Cooke thinks, and we coincide with him, that in hemiplegia after apoplexy especially at the beginning and in plethoric habits, emetics are doubtful remedies; but not so purgatives. Of diaphoretics, diuretics, and sialagogues, our author's experience does not enable him to speak. Indeed they can be but of very subordinate efficacy. These observations are meant to apply, of course, to hemiplegia in its early state, and more especially in its connexion with apoplexy. But when the disease has subsided for a length of time, and the apoplectic symptoms have disappear-

ed—when determination of blood to the head is no longer apparent—then the *methodus medendi* becomes considerably modified, and a stimulant class of remedies may be safely ventured on, though previously inadmissible. The chief external stimulants are frictions, blisters, sinapisms, fomentations, balnea calida, electricity, and galvanism. The internal are volatile salts, acrid vegetables, aromatics, essential oils, and resinous substances. The ancients, Dr. Cooke remarks, were much too free in the employment of stimulants in palsy, from always viewing the disease as one of debility, coldness, and obstruction. Dr. Cullen made some useful distinctions in this respect. The excitement of the passions has been resorted to, in former times, as a stimulant in palsy; and some curious instances of their efficacy are on record. But, as Dr. Cooke has justly observed, these instruments are not sufficiently under our control and management, ever to become of much practical advantage.

Of the external stimulants, our author has derived most benefit from friction by the hand or flesh-brush, which may be rendered more efficacious by stimulating liniments, as the fossil acids and volatile alkalies, combined with oil or lard—essential oils, &c. Blisters and sinapisms are very generally employed in palsy—yet they should be used with caution, when sensation and emotion are nearly extinguished.

"Some practitioners are in the habit of applying blisters, or other stimulants to the head, immediately after the accession of hemiplegia; but I am of opinion, that we ought not to make such applications in plethoric constitutions, and especially when the disease is the consequence of apoplexy, till some blood has been taken away; and I think, that when such stimulants are used, they should be applied on that side of the head which is opposite to the paralytic side; because anatomists have ascertained, as above-mentioned, that in a very great proportion of instances, the cause of hemiplegia is seated in some part of the brain, opposite to the side affected." 150.

The thermal waters, especially those of Bath and Buxton, have been greatly extolled, and doubtless they have deserved, like most other remedies, a modicum of the praise lavished on them. Sudden *cold* applications have also had their partizans. Dr. Cooke is inclined to think most favourably, upon the whole, of the warm applications as most under our command. "If cold does not produce re-action; or if it give occasion to a very great re-action, it would probably do mischief." Electricity has been very generally employed in hemiplegia,

especially on the Continent, and they say with success:—nevertheless, it seems, of late years, to have fallen into disrepute. There are many histories on record, where it has been unequivocally injurious. It is no doubt a powerful excitant of the nervous system. But what becomes of the vascular system the while. Is not paralysis very generally—indeed most commonly, the effect of pressure on the brain or spinal marrow: what success then are we to expect from electricity? We give our author's sentiments in his own words.

"From my own observations of the effects of electricity in paralytic affections, I venture to recommend a trial of it under the circumstances, and with the cautions pointed out. I have in many cases seen it materially useful, and I do not recollect a single instance in which it appeared to do mischief. Although Dr. Cullen, as above-mentioned, places more dependence upon a repetition of electricity, than upon its force, I wish to observe that, from experience, it appears to me to be chiefly serviceable on its first application, and that its beneficial effects are by no means proportioned to the length of time of the employment of it. Dr. Franklin observed, 'that the paralytic persons whom he electrified were generally restored for a few days in the beginning, but that they afterwards either did not mend, or that they relapsed into their former state.'

I saw, some years ago, a case of complete paraplegia, in which the good effects of electricity were at first extraordinarily great, but they were not permanent; for though the application of this power was for a considerable time continued, the patient experienced a diminution, rather than an increase, of sensation and motion, in the parts affected." 159.

Mr. Partington, whose experience is considerable, and on whose judgment we certainly should be much inclined to rely, considers electricity as superior to galvanism, especially in its application to the head and neighbouring parts.

The actual cautery is said to have been successfully employed by the Egyptians in apoplexy, palsy, and epilepsy; and the moxa is much used on the Continent. Internally, the rhus toxicodendron, nux vomica, horse-radish root, and the seeds of mustard, have been often administered, with various success.

Half a grain of the toxicodendron (powdered leaf) may be given thrice a day; and the quantity gradually increased to two, three, or four grains, watching carefully the effect. It commonly produces twitching or convulsive motion, or a sense of tingling or pricking in the paralytic part; and in these cases

its efficacy is most conspicuous. Dr. Alderson of Hull, has published several striking cases of the utility of this remedy in paralysis which afford encouragement, if there be any faith in medicine, to a further trial of it in those cases where the employment of stimulants is not contra-indicated.

Of late years, the nux vomica, a medicine a good deal resembling the rhus toxicodendron in its effects on the constitution, has been much employed, especially on the Continent. Dr. Fouquier has been in the habit of giving it in the form of powder and extract, beginning with small doses, and gradually increasing them as far as fifty grains in a day.

"In a short time after it has been taken, spasmodic contractions of the muscles, he says, in a greater or less degree, or more or less general, are produced. Among the unpleasant effects of the nux vomica, especially in large doses, delirium, a sense of heat and oppression, and anxiety, may be mentioned. Sometimes general tetanus, with loss of speech and the power of deglutition, accompanied with difficulty of respiration, pulsation of the heart, and dysuria, have been experienced; whilst the good effects of this remedy are manifested by a gradual return of power in the paralytic parts. 168.

Dr. Dickson, of Clifton, has communicated the results of two cases, in which this able physician tried the nux vomica in hemiplegia with some advantage; and Mr. Rose, of Swafham, has published two cases, in which the powerful, rather than the beneficial, effects were sufficiently conspicuous. In the eighth volume of the Medical Repository, Dr. Granville has communicated the result of Professor Dumeril's experience of this medicine in a case of palsy, where complete success was obtained. Many cases, on the Continent, have since occurred, where the nux vomica appears to have produced much benefit in this deplorable malady; and we sincerely hope it may continue to support its character. Cantharides administered internally, have been productive of some advantage in Dr. Cooke's hands; but it must be given with caution.

In the treatment of paraplegia, where the cause appears to be in the spine, issues applied on each side of the vertebral column will, of course, be the principal measure to be depended on.

"In cases," says Dr. Cooke, "of paraplegia from diseased spine in scrofulous habits, I am of opinion that considerable advantage has in many cases been derived from a proper attention to air, exercise, diet, friction, sea-bathing, mercury in alterative doses, and certain tonic medicines, especially the bark." 184.

Dr Baillie's remarks on this species of the disease have been fully given in our last number, page 391, *et seq.* to which we refer.

Of the partial palsies, *amaurosis* is the most important; for the treatment of which, we must refer to the volume itself, and to our review of Dr. Vetch's work in this, and Mr. Traver's volume in our next number. With the following, we must conclude our extracts from Dr. Cooke's publication.

"In those cases, in which the loss of motion of particular parts is accompanied with pain, Mr. Bell advises the application of leeches along the course of the nerves of the part affected, a free administration of cathartics, friction with laudanum, and proper supporting bandages. This plan, with the addition of opium and colchicum, internally taken in considerable doses, proved effectual in relieving the distressing case above-mentioned under the care of Mr. Bell." 207.

Towards the end of the volume, Dr. Cooke takes notice of the *paralysis agitans*, or shaking palsy, described by Dr. Parkinson; an exquisite specimen of which we saw a few years ago at Gosport; the unhappy victim of which is still probably alive. Mr. Parkinson's treatment of this remarkable variety, consists in local detractions of blood from the upper part of the neck; after which, blisters are to be applied to the same part, and a purulent discharge maintained by means of savine cerate. If this fail, large issues are to be established on each side of the vetebral column, near the cervical region, and kept open, with proper attention to the state of the bowels.

If we have been successful in rendering such an account of Dr. Cooke's work to the public, as may enable them to judge for themselves respecting its nature, object, and execution, we have done all that we attempted, and all indeed that the public require. When the scales of Justice are thus placed in hands, "*quas nulla movent vota precesve*"—the *opinions* of critics are but—"as dust in the balance."

Biographical Notice of the late Dr. GREGORY *of Edinburgh.*

(From the London Medical Repository, for May 1821.)

IT is with no common feelings of regret that we announce to our readers the death of this distinguished Physician, which took place at Edinburgh, on Monday, April 2d. We have never, perhaps, had to record a loss which will be so strongly felt by the great body of medical Practitioners in this country.

There are few of them who are not proud to trace some portion of their success in life to the instructions of this veteran teacher. For above thirty years he annually taught the medical students of the University of Edinburgh the most important part of their professional duties; and to his great talents and distinguished character much of the eminence of that seat of learning may justly be ascribed. His class was crowded by the studious of all countries; and, in consequence, an admiration of his abilities, and a reverence for his character, have extended, not only as far as the English language is spoken, but as far as the light of civilization has spread in the world. We are sure we should only be echoing a very general sentiment were we to add, that there is probably no scientific man of the present age whose name is so universally revered, or whose instructions have diffused over so wide a sphere the means of relieving human distress.

In this persuasion, we have felt that we could not confer a greater favour upon our readers, than by presenting them with a few particulars regarding the life and writings of the late Dr. Gregory. In the fulfilment of this task we have been contented to avail ourselves of such materials as are immediately before us, rather than attempt a more elaborate memoir hereafter; believing that, in this manner, we shall most effectually meet the anxieties of our readers.

Dr. James Gregory was descended from an ancient family in Aberdeenshire, which for above two centuries has enjoyed a distinguished name in the annals of science, and been particularly eminent for mathematical genius. It is a remarkable fact, that a great number of the descendants of this family have filled, with great repute, professional chairs in different Universities.

Dr. Gregory's father was a professor of medicine, first in Aberdeen, and afterwards in Edinburgh. His grandfather was professor of medicine in Aberdeen. His great grandfather, the celebrated cotemporary of Newton, and inventor of the Gregorian telescope, was professor of mathematics, first at St. Andrew's, and afterwards in Edinburgh. The other branches of the family equally contributed to support, in this respect, the honour of the name. The elder, being that of the Gregories of Kinardy, even boast of a much larger number. Among them may be noticed Dr. David Gregory, professor of mathematics at Edinburgh and Oxford, the father of Dr. David Gregory, formerly Dean of Christ Church; Mr. Charles Gregory, professor of mathematics at St. Andrew's;

his son, Mr. David Gregory, who succeeded him in the same chair; and, lastly, the celebrated Dr. Ried, professor of logic at Glasgow.

Dr. John Gregory, well known to the medical profession by his admirable "*Lectures on the Duties and Qualifications of the Physician*," and to the world in general as the author of "*A Father's Legacy to his Daughters*," left three sons and two daughters, by Elizabeth, daughter of William, Lord Forbes, a lady who, to great beauty and engaging manners, joined a very superior understanding, and a more than common share of wit. The eldest son, James, (the subject of the present memoir,) was born at Aberdeen in January, 1753, and received the rudiments of his education at the grammar school of his native place. During the winter 1764—5 he studied at King's College, Aberdeen: from that university he was removed next season to Edinburgh, and the following year was entered of Christ Church, Oxford. He resumed his studies at Edinburgh towards the close of 1767, and continued there until the winter of 1773, when he was sent to London to prosecute his medical education. Here he became a pupil of St. George's Hospital. The pleasure with which he looked back upon this event of his life was often mentioned by him, and he had an opportunity of publicly testifying it last year, when he attended the annual meeting of the gentlemen educated at that hospital. In June, 1774, he graduated at Edinburgh. His thesis is entitled "De morbis cœli mutatione medendis." It treats, in detail, of phthisis pulmonalis, hypochondriasis, and gout; and concludes by noticing the advantage of change of air in the prolonging of human life. It is marked by the same elegance of composition for which he soon after became so conspicuous. As a medical work it is chiefly interesting, as containing a very clear exposition of the doctrine of *irregular distributions of blood*. During the whole of the year 1775 he was on the Continent; and in the course of his tour visited Holland, France, and Italy. Many of his letters, written at that time, are still extant, and prove that he was feelingly alive to all the beauties of nature, and a fervent admirer of the treasures of ancient art. Those who enjoyed the pleasure of his society well know with what delight he recurred to the incidents of this tour.

In June, 1776, he was appointed, at the early age of twenty-three, to the professorship of the Theory of Physic, and he continued to teach this class with great distinction for twelve years. As a text book for his lectures, he published in 1779-80

the first part of his *Conspectus Medicinæ Theoreticæ*. The work was complete in two large octavo vols. in 1782. It rapidly acquired a high reputation all over Europe; not only in consequence of the scientific merits it possessed, but the singular felicity of classical language in which it was written. Several editions of it have since been published; but it is greatly to be regretted that it never received from the author those additions and alterations which were required to adapt it to the present state of physiological, and more particularly of chemical science. Hence its value is now considerably diminished to the student of medicine; but it is still perused with the highest advantage for the general principles of the science; and, as a model of classical latinity, it will probably remain unrivalled.

In the year 1790, Dr. Gregory was appointed, in consequence of the death of Dr. Cullen, to the chair of the Practice of Medicine, and for thirty-two years he sustained, and even increased the celebrity which the eminence of his predecessor had conferred upon the office. His lectures, besides their intrinsic merit as the vehicles of sound medical learning, were characterized by a richness of illustration, which we imagine to be quite unprecedented. From very early infancy Dr. Gregory had been remarkable for a most retentive memory, and this he had diligently cultivated. The advantages which it gave him as a teacher of medicine are incalculable. He has been frequently heard to describe cases, which occurred in the earliest years of his practice, with a freshness and *particularity* of detail, which made them appear like the observations of the day. No case ever seems to have escaped his memory, which could enforce some principle of pathology or practice; and he could draw, therefore, *almost ad libitum*, upon these stores, for the most striking illustrations of the doctrine he was inculcating. This it was, which appears to us, in a great measure, to have given that charm to his classroom, which all his pupils acknowledged, and which sent them back to their homes with feelings of reverence for his character, more resembling that which the disciples of antiquity entertained for their instructors, than the regard for a teacher commonly manifested in the present state of society.

Of the effect of Dr. Gregory's lectures upon the general character of medicine, as practised in this country, it would be difficult for us to speak in terms adequate to our sense of its extent. To them we would attribute, in no small degree,

that boldness and decision of practice, that just understanding of the powers of medicines, and that general candour which disdains the cloak of affected importance, by which we may, without the imputation of vanity or prejudice, characterize the medical practice of this country. It is much to be regretted that he never carried into execution the design which he had long contemplated, of publishing a *Conspectus Medicinæ Practicæ*, and we despair of ever seeing this deficiency supplied. The mass of medical information which he possessed was immense, and we much fear it has perished with him. No notes of his lectures can, we imagine, ever be considered as giving a correct view of his opinions or practice. We are led to this conclusion by considering how remarkably *precise* he was in the choice of his expressions, how frequently he varied his lectures from the mere extent of the subject before him, and with what candour he modified his views according to the experience by which he was continually profiting.

As a literary man, Dr. Gregory long enjoyed a high reputation. He was early devoted to the study of metaphysics, and in the refutation of the doctrine of necessity he displayed uncommon ingenuity. His Literary and Philosophical Essays, in two vols., were published in 1792. As a philologist, he is known by a very profound essay on "*The Theory of the Moods of Verbs*," published in the second vol. of the Transactions of the Royal Society of Edinburgh. Though not a professed mathematician, his mind was deeply imbued with the spirit of mathematical science, inherited from his celebrated ancestor; and this can be traced in all his writings, conspicuous alike for closeness of reasoning, clearness of arrangement, and the utmost precision of language.

His controversial writings are numerous, and display an exuberance of talent, a lively wit, and an extent of general information, which is astonishing, when we consider with what assiduity he cultivated, from a very early period of life, his professional pursuits. It has been said of him, that the nice and chivalrous sense of honour, by which he was distinguished through life, was perhaps too high toned for the tranquil exercise of his profession, as leading him occasionally into differences with his professional brethren, which many of his friends lamented, while they admired and venerated the high notions of personal and professional honour in which they originated.

In 1781 he married Miss Ross, daughter of James Ross, Esq., of Stranraer. By this lady, who did not long survive her marriage, he had not any children. In 1796 he married

Miss M'Leod, daughter of Donald M'Leod, Esq., of Glanies in Rosshire. By her he has had eleven children, of whom seven are living; five sons, and two daughters. The eldest son is practising at the Scotch bar; and the second son, who bears his father's name, is now qualifying himself to follow that profession of which his father was so bright an ornament.

To great merit, as a teacher of medicine, and a high reputation as a man of science and literature, Dr. Gregory added a distinguished character as a *practical* Physician. From the time he was first appointed to a chair in the University, he took an active share in the Clinical practice of the Infirmary; and the lectures by which he illustrated it are spoken of, by those who heard them, in terms of unbounded admiration. About the period of his second marriage he began to be actively engaged in private practice. This increased so much upon him, that in less than ten years afterwards he was obliged to give up his Clinical lectures, to the great regret of the students. For more than twenty years past his advice has been anxiously sought from every part of Scotland, and his visits frequently extended far into the borders of England. To the poorer classes his professional advice was at all times gratuitously open. Such, indeed, was the disinterestedness of his conduct, that his income was never nearly so great as the celebrity of his name might have given reason to expect, and his generous heart was always open to afford that relief which wealth can bestow.

The leisure time which remained to him from the fatigues of practice was divided between the conversation of his friends, and those lighter amusements in which his powerful mind was fond to indulge. His society was sought after by men of the first eminence and rank in the country. The brilliancy of his wit, and the epigrammatic force of his conversation, will long be remembered by those who had the good fortune to enjoy his acquaintance. To a numerous circle of relations and intimate friends he was endeared by the stronger tie of a kindness of heart, the memory of which must be indelible.

In gardening, Dr. Gregory early found a great source of amusement, and he continued to indulge it to within a few days of his decease. At one period of his life he was a zealous archer; at another he entered with spirit upon the duties of a soldier, and never ceased to look back with pleasure upon the time he carried a musket as a private grenadier. Possessing a fine relish for ancient poetry, he occasionally at-

tempted to infuse its spirit into our own language. He was most happy in his *Inscriptions*, many of which are worthy of the proudest days of Roman literature.

In spring, 1818, he experienced a severe misfortune in the breaking of his arm, by the accidental oversetting of the carriage in which he was travelling. The injury which he received was very severe, and his health soon after began sensibly to decline.

In April, 1820, he visited London, after an absence of twenty-eight years, as one of a deputation from the University of Edinburgh to congratulate his Majesty on his accession to the throne. On that occasion he was honoured by a private audience of his Majesty, of whose gracious condescension he cherished the most grateful remembrance. During the last year he suffered severely from attacks of difficulty of breathing, which ultimately ended in hydrothorax, which put a period to his valuable life, soon after having completed his sixty-eighth year. His health did not permit him to give any lectures, during the last winter, after Christmas.

The course was completed by his nephew, Dr. W. P. Alison, in a manner which, we hear, has gained the approbation of a very numerous class.

His remains were interred in the family vault in the Canongate churchyard, with great solemnity, on Saturday, April 7; the funeral being attended by the magistrates, professors, and other public bodies, the students of his class, and many private friends. In the Canongate, where Dr. Gregory at one time resided, a very strong testimony of respect was paid to his memory, by shutting up the shops during the time the procession passed. An universal feeling of regret, indeed, has been expressed for the loss of one whose life was at once so honourable and so useful. Uniting, in a degree seldom equalled, the studies and acquirements of a man of science with the taste and honourable feelings of a gentleman, he shed a lustre upon the medical profession, whose influence will, we trust, be as lasting as it has been extensive and important. We know of no one to whose life and conduct may more truly be applied the classical words he himself inscribed on the tomb of one of his earliest and dearest friends:—"Vir priscæ virtutis, per omnes vitæ gradus et in omni vitæ officio probatissimæ."

The loss of such a man will be felt, as occasioning a blank, almost irreparable, not only in the academic celebrity of Edinburgh, but even in the national distinction of the country.

MEDICAL AND PHYSICAL INTELLIGENCE.

Letter addressed to the Medical Profession generally relative to Vaccination. By Dr. Edward Jenner.

Presuming that you are conversant with the practice of vaccine inoculation according to the instructions which I have formerly published, and that you may have seen, in addition to my general observations, those which I have since made and promulgated, respecting the "Varieties and Modifications of the Vaccine Pustule, occasioned by an herpetic and other eruptive states of the skin," I take the liberty of requesting to be informed whether the observations acquired in your own practice coincide with mine? That is to say, whether the vaccine vesicles, under these contingent circumstances, go through their course with the same regularity as when the skin is free from diseases of this description?

Secondly, Whether, on the other hand, such individuals are more liable to resist the legitimate action of vaccine lymph, when inserted into the arms, than those who are free from such eruptive affections?

Thirdly, Whether you have met with cases of small-pox, or what has been termed the varioloid disease, after vaccination: and, if so, whether in such cases you ascertained those deviations at the time of vaccination in the progress of the pustules on the arms, which I have described as liable to take place when the skin is affected with herpetic and other eruptions?

As you may not have the paper before you to which I here allude, nor the short series which followed it, I will point out the periods of their publication, and where they are to be found. The first was published in the Medical and Physical Journal, No. 66, for August 1804, and gives an outline of the subject, of some extent. It points out the fact, that a single serous blotch upon the skin, existing during the progress of the vaccine vesicles on the arms, may occasion such irregularity and deviation from correctness, that vaccination, under such circumstances, cannot be perfectly depended on.

I have found abrasions of the cuticle to produce the same effect; such, for example, as we find in the nurseries of the opulent as well as the cottages of the poor, behind the ears, and upon many other parts where the cuticle is thin. Happily we find no irregularity in the vaccine vesicle in an uncontaminated skin; but we find

it if the skin is beset with these herpetic blotches, or even simple serous oozings from an abraded cuticle. It is not to be considered of less consequence when occupying a small space; a speck behind the ear, which might be covered by a split-pea, being capable of disordering the progress of the vaccine vesicle. Dandriffe may be considered as a malady of this class, the incrustation on the scalp being formed from excoriation beneath; and however slight, for there is every gradation between a thin scurfy layer of a dirt-looking substance, or even patches of this thin crust, and tinea itself. However, fortunately for the safety of the vaccine practice, and fortunately, too, for the ease of the practitioner, all these affections of the skin may be removed with very little trouble.* Sore eyelids are also impediments to constitutional vaccination.

The second paper relating to this subject was given by the late Dr. Willan, in answering to the following interrogatory, addressed to me by himself:† "What are the changes produced in the vesicle, when a person is affected during vaccination with the shingles, the vesicular ringworm, or impetigo?"

To this question I made a full, and I believe, a satisfactory reply. Its purport will be shown by quoting a few sentences from it. To answer this question in its fullest extent would lead me through a wide field of observation, which I mean to go over at a future time; but the following answer may probably convey to you as much information upon the subject as you may now require." Vaccination, under the circumstances you mention, usually produces a striking deviation from the perfect character of the vaccine vesicle at some period or other of its progress, but more frequently in its early than in its declining stages; indeed it is commonly perceptible in a day or two after inoculation. It would be difficult, perhaps impossible, without the aid of drawings, to give a correct description of the varieties which an herpetic state of the skin is capable of producing, from those trifling deviations which prove no impediment to the vaccine security, up to that point of imperfection in the vesicle which affords no security at all. Perhaps I commit an error in saying "no security at all;" for it strikes me that the constitution loses its susceptibility of small-pox contagion, and its capability of producing the disease in its perfect and ordinary state, in proportion to the degree of

* The most effectual application which I knew for subduing these cuticular diseases that produce impediment, is the unguentum hydrargyri nitratis, as much lowered with unguentum cetacei, or any other bland ointment, as the irritability of the subject may require. The dandriffe demands a double process; the first consists in removing the incrustation, the second in subduing the oozing. There are skins that will not bear unctuous applications; the desiccative lotions may then be made use of two or three times a-day; such as those prepared with the sulphate of zinc or superacetate of lead, &c.

† It was published in the year 1806, in his Treatise on Vaccine Inoculation.

perfection which the vaccine vesicle has put on in its progress and that the small-pox, taken subsequently, is modified accordingly.* When no deviation takes place in the ordinary course of the vaccine vesicles, or when it is inconsiderable, the herpetic blotches or vesicles, of whatever kind they may be, often assume (sometimes as early as the third or fourth day after the insertion of the vaccine fluid,) a new character, not unlike the vaccine, and, keeping pace in their progress with the vesicles on the arm, die away with them, leaving the skin smooth."

These two papers comprehend, first, the simple fact of important deviations being produced by diseases in pre-occupation of the skin; and secondly, a general account of the characters of these deviations, and their differing degrees of influence upon the vaccine protection.

Some further observations were published by Dr. Wilson Philip, of Worcester, in an Appendix to his work on Febrile Diseases, who requested some information from me on this interesting subject. This letter goes more into detail than the former, though its purport is the same,—namely, to guard the practitioner against the insidious influence of a diseased skin, when he vaccinates. It will be an object of future consideration to enter more generally into the minutiæ of this subject; but a sketch like this does not afford scope for the completion of such a design. Let me advise every practitioner not to confine his cautions, nor to narrow any meaning, to one class of eruptive affections. In short, every disease of the skin which may be called *serous*, or one that sends out a fluid capable of conversion into a scab, has the power of exerting this modifying and counteracting influence; and I have also seen purulent fluids exert a similar influence in producing deviations If I was asked what were the other actual impediments to perfect vaccination, as a general answer I should say, that I scarcely know any other except spurious matter,† or impediments too obvious to require my naming them here, such as deranging the vaccine vesicle in its progress; by incautiously robbing it of its contents, or producing a new action by external violence. (*London Medical & Physical Journal, for April* 1821.)

* Further observation has confirmed this opinion, and has also developed much other curious matter respecting the spontaneous blending of the herpetic with the vaccine fluid, through the medium of the constitution, when under the influence of herpes.

† I am happy to see that these interruptions are now discovered in Germany; as appears in Professor Hufeland's Journal for June 1819, an extract of which is given in the London Medical Repository, vols .xiv. p. 502.

In addition, see Bateman's "Synopsis of Cutaneous Diseases," pp. 222, 223 Cross's "History of the Variolous Epidemic at Norwich, 1820," pp. 60 *et seq.* 196 and 288. I was lately puzzled to find the cause of irregularity in a vaccine vesicle the skin being free from any apparent eruption; upon minute inquiry, I discovered a whitlow on the thumb, in which suppuration had taken place.

Observations on the Treatment of Gout. By A. Veitch, M. D.

From the frequent occurence of gout in this neigbourhood, I have for some time, paid more than ordinary attention to the treatment adopted in that disease, and having found such decided benefits from the use of local as well as general blood-letting, but particularly the former, that I have been induced to give it publicity through the medium of your valuable Journal, that a trial of its effects may be more widely extended, and some of your more able correspondents induced more closely to investigate the *modus operandi*, which, if it tend to a more perfect knowledge of this mysterious diease, my object will be attained. It is by no means my present intention to offer any remarks, with a view to the illustration of any opinions I may entertain respecting the cause of this disease, though they may appear necessary, when so widely differing from the practice of the present day, but as that would lead into a longer detail than what I purpose by the present communication, suffice it for me to state, that I have, like others of my professional brethren, tried, and seen tried, in vain, so many and so various means, that I am doubtful whether the remedies have not oftener been worse than the disease itself; and it is no less painful to see men, in all ranks of life, daily swallowing the ephemeral specifics of the day, to the ultimate ruin of their constitutions, and substituting temporary cure for permanent mischief, without having it in our power to counteract the deleterious effect of these pernicious drugs. The following plan, however, has at least this advantage, that we are aware of what is doing, and have it in our power to regulate the means, according to the age, strength, and constitution of our patient. But, after every trial which I have made of it, no bad effects were ever produced, even in the most debilitated; on the contrary, it has never failed, when properly administered, and I am every day more persuaded of its beneficial effects.

I am aware, that the profession are not to be told, that general as well as local bleeding has before been recommended, tried, and abandoned; but, I am persuaded, it has been abandoned only in consequence of misapplication, and upon its proper application its success chiefly depends.

Leeches from the nature of the disease, are perhaps the best local application, and it is my usual practice, as soon as the patient begins to feel a fit of the gout coming on, and when its determination to a certain part is ascertained, by the commencement of *pain* in that part, immediately to apply four or five leeches, near to, or upon the part affected, though I have seen an attack on the knee entirely removed by the application of leeches to the foot. To the gout, the greatest attention, however, is necessary, not to apply them

after *inflammation* has commenced in the part. The presence of *pain only*, and *not* of *inflammation*, is the time when they ought to be applied; if this is not attended to, the paroxysm, in place of being diminished, will be increased. On the contrary, by paying strict attention to this, the paroxysm will altogether be prevented, as well as its recurrence, by a timely reapplication, (if it should be found necessary by the return of pain.) Should, however, the swelling, pain, and also the *inflammation*, have come on so rapidly, or there has been a delay of the application, we must wait till the *inflammation* has somewhat subsided, before we ever apply the leeches; after which all the good effects will follow, and the hitherto suffering patient will in half his usual time regain the use of his legs and feet. In the event of the head, heart, lungs, or stomach becoming affected, general, as well as topical bleeding, combined with blisters, and calomel purgatives, will prove equally efficacious. I could give many cases both of old and young gouty subjects, who have found the most decided relief from this plan of treatment. In young persons, and those who have not had gout, were general as well as topical blood-letting, together with other antiphlogistic means, strictly adhered to, on its first commencement, they would have little cause to fear a second attack. An able and learned physician seems to have had similar ideas when in his (Clarke's) Compendium Praxeos Medicinæ, he says, "An florente ætate, viribusque minime labefactis, prima morbi accessione, sanguinis missio?" And the old gouty patient will feel many of his sufferings alleviated by the timely application of this *local* method; and when the limbs have become stiff from repeated attacks of gout, and the formation of concretions on the joints, "An sarsaparillæ decoctum acido nitrico et hydrargyri preparationes ad salivæ fluxum lenem ciendum?' (*Edinburgh Medical & Surgical Journal for April*, 1812.)

Alford Lincolnshire, 24th Jan. 1820.

Suggestion respecting the possibility of Destroying Cancer, by the application of Intense Cold, communicated to the Editor by a Medical Friend.

An expedient has suggested itself to my mind, by which I think that the application of artificial cold to a diseased part might be rendered very manageable: That is, by employing masses or plates of metal, cooled down to the requisite degree in a frigorific mixture, and then applied, for a sufficient time, to the part upon which it might be wished to induce mortification. I suppose that this effect would certainly be induced, by the application of heat, after withdrawing the cold application.

Such metallic masses might be formed to any shape or size that might be wanted, and would have the advantage of limiting the application of the cold correctly to the surface intended.

The section of Van Swieten, which I mentioned to you to-day, upon the subject of cancer, is 499. His speculation about curing the disease, by inducing mortification, commences with the words, "Sed an non possit totus cancer emori?" or, in the translation, "But is it not possible for a cancer to mortify?" and is continued to the end of that paragraph. The view he takes of the subject seems most sound and rational; and it appears to me that we possess an agent, in artificial cold, sufficiently powerful to execute his views. Having barely suggested the idea, I shall content myself with recommending it to your more mature deliberation.

It would seem to correspond pretty correctly to what Van Swieten was in quest of; but in deep-seated diseases, where the preservation of skin by the knife so much contributes to the cure, it would seem to be less suitable. In more superficial affections, or in prominent tumours, especially those with circumscribed necks or bases, it may have fewer disadvantages. (*Idem.*)

Utility of the Piper Cubeba in Leucorrhœa, communicated by Dr. S. Traill *of Liverpool.*

Having proved the utility of the Indian remedy *piper cubeba*, in many cases of blenorrhæa, I was led by analogy to try it on several persons labouring under leucorrhœa, and am satisfied, that it is a valuable auxiliary in this troublesome disease. In every instance it has mitigated the violence of the complaint, and in several cases has removed it. I have administered it in doses from 1 to 3 ʒ of powder; but many persons cannot take more than ʒi. without experiencing nausea; and ʒij. given twice or thrice a-day, will generally be found sufficient. As far as my experience goes, it is most useful in old and obstinate cases of blenorrhœa: in one recent case it seemed to have a tendency to excite hernia humoralis. (*Idem.*)

Remarks on Coffee as an Expectorant, by James Robinson Scott, F. R. S. *Edinburgh.*

As that state of the bronchial membrane, in which there takes place a pretty copious and free secretion of mucus, is unfavourable to the continuance of certain paroxysms of asthma, it becomes desirable to produce such a state, the symptom or indication of which will be as above, and therefore various medicines called expectorants are used. Coffee as a palliative in asthma has been long known. Some think it chiefly acts as an antispasmodic; but I was about a year ago forcibly struck with its singularly sudden operation as an expectorant in my own person; I found almost every expectorant fail in its effect but coffee. A friend observed and called my attention to the fact, that the *moment* I swallowed about half a tea-cupful of coffee without milk, I expectorated freely. I have since that time derived great advantage from its use, but I *always*

find that the expectoration *instantly* succeeds to the introduction of it into the stomach, however dry, or even sore the bronchial membrane may be. No other medicine of the class of expectorants operates at all so speedily on me as coffee. How closely then must nervous sympathy be connected, and how quickly the nerves act over secretion? (*Idem.*)

Case of an Affection from Narcotic Drugs simulating Somnambulism. By M. SARLANDIERE. From the "Bulletins of the Medical Society of Emulation." Published in the "Revue Médicale" for February.

On the 14th of March, 1820, Dr. Sarlandière was summoned to see a tailor, in the forty-fifth year of his age, whom he found in a state of permanent convulsion, with commencing symptoms of opisthotonos, the eyes being fixed and open, and the pupil so much dilated that the circle of the iris was scarcely perceptible: the limbs were at first convulsively moved in an automatic manner, which movement afterwards gave place to a kind of tetanic spasm.

The wife of this individual was likewise affected: she was, however, without the convulsive agitations of her husband; but she had fixed eyes, with excessively dilated pupil.

M. Sarlandière, having learned that the affections in question followed the use of an enema, attributed the symptoms to narcotic ingredients, of which the injections might be composed; and he therefore, in concert with M. Delarue and M Delaude, set about an examination of these ingredients, which were found to consist of datura stramonium, and the papaver nigrum, which had been given to these individuals by a herbalist in place of emollient herbs.

Purgatives were immediately administered in the form of clysters, and acidulated injections afterwards thrown up, as well as acid potions given to drink.

At the end of about an hour from the commencement of this treatment, the spasmodic rigidity by which the man was affected gave way, and he almost immediately placed himself in his bed in the same attitude as when sitting on his board; and now the symptoms of somnambulism became completely marked. He was imaginarily engaged in his usual occupations, appeared to be extending or folding up cloth, took hold of something which he supposed to be a needle, appeared to be threading this needle, and made a knot upon the imaginary thread. Sometimes supposing that he had let the thread slip, he renewed the operation of threading; and he appeared to make several unsuccessful attempts at pushing it through the needle's eye, till at length he seemed to have succeeded.

These statements are thus given in detail, for the purpose of showing to what extent the brain was occupied with a certain set of ideas: and it is necessary further to say, that all endeavours to make him hear and see were fruitless. He took not the smallest notice of loud sounds addressed immediately to his ears, nor did he regard any object placed before his eyes, intent only on his imaginary employment.

At times he seemed to conceive that some one had entered the room, and his countenance then assumed a smiling aspect, and he moved his lips as if speaking, (no sounds, however, were emitted;) the motion of his lips then ceased for some time, and he appeared to be listening to the reply of the visiter. He occasionally made the motion as if spitting, although in effect he did not spit. Now he seemed occupied in measuring for clothes; now in arranging and folding his cloth, cutting it with his scissars, and, in fact, doing every thing in the way of his calling. He was thus occupied for the space of fifteen hours, without eating or drinking any thing, excepting a few spoonfuls of citric lemonade, and this it was difficult to make him take.

By degrees he recovered the power of speech; he then commenced a conversation, imagining that he received answers to his remarks. It was not till towards the evening that he actually understood what was said to him, and replied rationally: his sense of sight was not restored till after the return of his speech; he shortly, however, was able to distinguish the persons who were about him. His head, notwithstanding, still continued to run upon his business; he persevered in his supposed employ, and actually conceived that he was making use of his trade utensils. This constituted, indeed, the most remarkable feature in the case. M. Sarlandière, at his sixth visit, found him under the same delusion; he was conversing familiarly with those about him, but still on the subject of his business; and all endeavours to convince him that he was not on his board, but on his bed, proved unavailing. It was now midnight, and M. Sarlandière ingeniously hit upon an expedient to change the current of the poor tradesman's feelings and thoughts, by holding a watch to his ear, letting him hear it strike the time, and then remarking that business had better be abandoned for the present, or it would prove too fatiguing, injure his health, and prevent the capacity of working the next day. This last suggestion proved the most effectual. The poor man now descended from his imaginary board, undressed, and laid himself down to rest. During the remainder of the night he was calm, with the exception of some involuntary startings; and, on the following day his senses returned. A slight fever succeeded all this agitation, which, however, soon yielded to a proper diet, quiet, and acidulated drinks.

In the case of the woman, the derangement was not so complete; but this was attributable to the circumstance of her not having

succeeded so well as her husband in throwing up the injection, and to the immediate return of it. Almost immediately after the operation, she found herself strangely affected with giddiness; her arms seemed to have the weight of lead; she saw thousands of flies about her, to which succeeded a number of serpents, lighted kilns, and apartments hung with black; but in the midst of these objects she occasionally perceived those by whom she was really surrounded. She saw her own apartment, her husband, her furniture; &c. She continued the whole of the day sitting on a chair; and she thought that needles, scissars, and pieces of cloth lay about her. Sometimes she tried to lay hold of these things, in order to occupy herself at her accustomed work; but they seemed to elude her grasp. Sometimes she felt that she had succeeded in getting hold of them, and she set about using them as usual. The above she afterwards related from recollection; and M. Sarlandière had remarked, that her actions during the paroxysm corresponded with her account.

In her, as well as in her husband, the pupil of the eye was excessively dilated; the eyes themselves were fixed, and fully open: but throughout she was more alive to her actual condition, and when questioned as to the cause of her disorder, she attributed it to the enema she had taken in the morning. Sometimes she suddenly started, as if urged by a momentous impulse; sometimes she rose up as if to run rapidly from a pursuing enemy. But, during the whole time, she preserved the use of her speech, her ears, and even her eyes, when her attention was forcibly called to surrounding things.

We give the following abstracts of two cases, related with several others of more or less interest, by Dr. Venturi, first physician *della citta di Sanseverino*, that seem to us to present some very interesting facts for the consideration of theoretical pathologists, as well as medical practioners.

A girl, twenty years of age, was, in 1812, suddenly affected with very severe rheumatic pain in the middle and upper part of the back. A physician prescribed a spirituous embrocation. When this had been used two or three times, the pain disappeared from its first seat, and fixed just about the union of the last dorsal and first lumbar vertebræ. The use of the embrocation was continued; but the pain soon became almost insupportable, and seemed to be deeper seated. After a few days' very severe suffering, the patient began to experience a sense of formication in the lower limbs, that was soon followed by a sense of weight, and then, gradually, complete loss of sense and power of motion in them. Dr. Venturi saw her first after the lapse of four months from the occurrence of the paraplegia. The patient had then a *chlorotic* aspect, and had not menstruated for four months; the urine and feces passed unconsciously and involuntarily; and the lower limbs were flaccid,

emaciated, insensible, and motionless. A dull and deep pain remained in the part of the spine above designated. The pulse became accelerated, and presented a vibrating character, towards the evening, when there was an increase of heat over the surface of the body generally, excepting in the paralytic limbs; the temperature of which was always below the natural standard. A gentle sweat came on towards morning, with which the fever disappeared. There was a periodical discharge of a large quantity of mucus from the uterus, accompanied with a sense of heat in the part, as if the uterus were affected with a sort of catarrh. Dr. Venturi commenced the cure by the abstraction of about ten ounces of blood from the back, in the region of the part affected, by means of leeches, and the administration of three grains of kermes mineral, in six doses, daily, which were accompanied by a draught of infusion of arnica-flowers. After three days, the state of the patient having suffered no change, the dose of the kermes mineral was doubled, and two scruples of mercurial ointment were rubbed along the spine. This friction was repeated nineteen times, in thirty-four days. The warm bath was also employed. After the fifth friction with the ointment, the patient became conscious of the passing of her urine and feces, and in two or three days more the evacuation of them was entirely under the dominion of the will. After the ninth friction, the patient felt pain about the great toe of the right foot, like that from a recent blister: this sort of pain then extended over the foot, and was soon followed by sensibility to external impressions over the whole limb. Two days afterwards, the return of sensibility occurred, in a similar way, in the left extremity; and in a few days more the power of motion in both of them. The mercurial inunction was now omitted. Some occasional painful spasmodic contractions of the affected limbs now occurred, which were the only inconveniences experienced by the patient. These soon subsided, under the use of the warm bath and the infusion of arnica. It was thought proper to treat the patient for another month with steel medicines and infusion of gentian; at the end of which time not the least vestige of the disease remained.

The other case above alluded to was one of *amaurosis*.

A youth, thirteen years of age, of a slender habit of body, had been subject, from time to time, from his infancy, to ophthalmia. In the year 1813, he had a new attack, but slight to external appearance, and confined to the right eye, but accompanied with deep and very acute pain, which ceased during the whole of the night, but returned towards morning, and continued without intermission till the evening. During the paroxysm of pain, the affected eye appeared unusually injected with blood, the tears flowed copiously; the temporal artery on that side beat with violence, and the corresponding venous ramifications were tumid. At first

there was intolerance of light, but afterwards the eye became more and more insensible in this respect; and on the lapse of two months the sight of the affected eye was totally lost, the pain having ceased, and no other morbid appearance of the eye being manifest than a little inordinate dilatation of the pupil. At this time the same inflammatory symptoms occurred in the other eye, and it was feared that they would be followed by similar results, and, consequently that total blindness would ensue; the stimulus of light producing at length but a feeble impression on the eye secondarily affected. Such was the case of the patient when he was first seen by Dr. Venturi, which was five months from the commencement of the disease. Many and opposite kinds of medical measures had been employed; as purgatives, sarsaparilla, china-root, valerian, ether, musk, camphor, opium, various collyria, vesicatories to the arms, and a seton in the neck.

Dr. Venturi remarked a great disposition to morbid excitement about the head: a slight degree of bodily exercise was sufficient to produce great heat in it, with copious sweating. He determined to treat the case by sedatives. Ten leeches were applied about the temple and external angle of the left eye. During the paroxysm of pain, a pledget wet with ice-water, frequently renewed, was kept on the eye. A spare diet was ordered; and the internal administration of oxide of zinc and extract of cicuta, in quantities of four grains of the former and eight of the latter daily. The quantities were gradually increased to fifteen of the zinc and twenty of the cicuta: but then, after a little time, vomiting being excited, they were reduced to the original extent. The paroxysms of pain soon ceased, and left the eye last affected in the natural state. At this time a favourable change took place in the right eye; the sense of sight began to re-appear, and it was after two months perfectly re-established. The patient presented for some time the curious phenomenon of a transudation of blood in the spot occupied by the cicatrix of the seton, whenever the excitement in the head, above mentioned took place.

On the Vascular Network of the Choroid Coat of the Eye.

Soemmering has lately occupied sixteen quarto pages in a very interesting work on this subject. Not satisfied with what had been already done, our author invented and tried various machines, in order to obtain a satisfactory view of the vascular network of the choroid coat. After more than twenty years trial to realize his wish, he on a sudden succeeded beyond his expectations by employing Woollaston's camera lucida, as simplified by his son, conjoined with one of Dollond's microscopes. Of incomparable beauty are the views of portions of the choroid coat, measuring scarcely one-fourth of a line square, obtained in this way; drawn by Soem-

mering the son, and engraved by Schleich. Portions of the choroid coat of a man, a child, an ox, a salamander, and a cock, twenty-five times magnified, gave the result, viz. that the finest vessels in the salamander are absolutely larger than those of the ox and man. "It is now proved as a new anatomical fact, demonstrated by ocular demonstration, that the blood-vessels of the choroid coat do not diminish in size, as the size of the eye-ball diminishes, but that the choroid coat of a small eye may be considered as a part of the choroid coat of a larger eye." (p. 20.) "Further, that the configuration of the vascular network of the choroid coat of the eye, in the various classes, genera, and species of animals, is so different, that the coat of each may be thereby readily distinguished."

The retina has a distinct set of blood-vessels derived from the central artery, and terminating in the central vein, and which have no communication or inosculation with those of the choroid coat excepting at the edge of the retina. From this separate system of blood-vessels, and owing to its own elasticity, the retina wrinkles and shrinks, not only after death, but during life, subsequently to violent inflammation, wounds and bruises.—(*Quarterly Journal of Foreign Medicine & Surgery, Vol.* ii.

Dr. Fouquier of Paris, to whom we owe the introduction of *nux vomica* into use, has lately been trying the efficacy of another powerful remedy—the *acetate of lead*, when given in larger doses than those in which it had hitherto been administered. "When a physician must renounce all hope of curing his patients," says Dr. Fouquier, "there often yet remains for him this consolation, that of alleviating their sufferings and prolonging their existence." The profuse sweats in phthisis contribute much to exhaust the patients of that disease, and hasten the fatal termination, especially when accompanied with colliquative diarrhœa. Dr. Fouquier thinks that he has found in the acetate of lead a mean of repressing this debilitating evacuation. He first employed that medicine in the solid form, in pills of a grain each: but he has since found it more convenient to administer it in solution in a mucilaginous mixture. He relates the histories of twelve cases, arrived at the last stages, in which this medicine was used, in one to the extent of twelve grains as a dose, without finding after death, in the patients who died in the hospital, any affection of the intestines which might be attributed to the mineral. In one or two individuals only were some slight colic pains manifested; and these did not appear to be owing to the medicine, as they were accompanied with diarrhœa, and did not vary whether or not the use of it was continued. In a few cases there was constipation, for the removal of which glysters became necessary.

Case of Extirpation of the Thyroid Gland, by Dr. Klein, *of Stuttgardt.*

A boy, eleven years of age, deaf and dumb, and of a very delicate constitution, had, from his infancy, a circumscribed tumor situated on the left side of the neck, about the size of a nut, and which had gradually increased in bulk. After having been put under the care of several practitioners, he was brought to Mr. Klein. The tumor commenced on the left side, at the margin of the jaw, occupied the whole of the left side of the neck, as far as from the larynx to behind the ear, and down as low as the third rib. Vessels of the size of the finger run over its surface: it was moveable with difficulty, rather because of its weight than of its adherence to the parts beneath. It was a little irregular, or tuberculated, in its construction; and the pulsation of the arteries which penetrated its interior could be distinctly felt in several parts. Its removal by the knife having been determined on, the patient was laid on a table, so that his head, shoulders, and legs, might be most effectually secured by assistants. On making the necessary preliminary incisions in the integuments, the veins, which were much dilated, were divided, and threw out about half-a-pound of blood; but they were soon secured by compression with the fingers, as well as the subclavian artery. After the flaps of the integuments were dissected aside, the tumor was forcibly drawn outwards; and, using sometimes the fingers and sometimes the scalpel, or its handle, it was separated from the larynx and trachea. The operation occupied a minute and a half; but Dr. Klein was surprised to find no hemorrhage, even from the thyroid arteries, which were, of course, divided. On examining the patient, however, he was found to be insensible; and, though every proper means was used for three-quarters of an hour, it was found impossible to restore him to life. On opening the body, it was found that neither the carotid artery, the par vagum, the jugular vein, nor the trachea, had been injured; but all the vsasels of the dura mater and the brain were gorged with blood: there was a lage quantity of serum in the ventricles. "I think myself authorized," says Dr. Klein, "to conclude that the patient died of apoplexy occasioned by the revolution in the circulation which the operation had caused. The tumor itself was found to be the thyroid gland, which had suffered disorganization throughout its whole structure, excepting a small portion on the right side. It weighed two pounds, and its base was of about six inches diameter in every direction. It was formed of a solid, lardaceous, reddish substance, divided into several lobules."

In regard to the cause of death in this case, we would suggest to others the consideration whether or not *moral* circumstances had some influence in causing it. The agitation and suffering of the

boy,—being deaf and dumb, and consequently incapable of understanding the object or necessity of the operation,—must have been extremely intense. We doubt whether such an operation on such a subject was justifiable.

Vaccination in Denmark.

We have extracted the following statement from a statistical work on Denmark, lately published in the Danish language.

Vaccination was introduced into Denmark in the year 1800. In that year a society was formed at Copenhagen for vaccination, and a few days after a commission was appointed by the king, which is still in activity.

In a circular of the 13th July, 1816, addressed to all magistrates and bishops, it was ordered, that every one who had not had natural small pox, should be vaccinated; in default of which the individuals could not be received at confirmation, admitted into any school or institution, nor received as apprentices to trades, or as members of any public institution or government office. Moreover, no priest was permitted to join in marriage those who had not been vaccinated or had the small pox. In the event of the small-pox appearing in the country, all the inhabitants of the villages must submit to vaccination. The same in a town. All communication to be stopped between villages and houses where the small-pox appears, under pain of imprisonment, and fed on bread and water; the proprietor of a house, when the least trace of small-pox appears, is obliged forthwith to give notice of it to the curate, magistrates, and director of the police.

There is an institution for gratuitous vaccination at Copenhagen. Physicians and curates in the country vaccinate gratuitously. The general commission publishes every year a general report of the results of vaccination, and honourable mention is made of persons who have distinguished themselves by their zeal for its propagation.

The number of persons vaccinated in Denmark, (without including the dutchies of Holstein and Slesvic,) at the end of 1817, was 345,167. Since 1808, when the small pox was epidemic, it no longer exists, and is totally unknown.

The same regulations apply to the dutchies of Holstein and Slesvic, where in a population of 600,000; the number of vaccinated amounted in 1814, to 75,110.

It is remarkable that in 1791, a schoolmaster in the country, at Holstein, named Plett, had introduced a sort of vaccination, and was very zealous in 1812, in its introduction.

METEOROLOGICAL OBSERVATIONS.

STATE of the weather at Philadelphia during the first six months of 1821.

JANUARY.

Thermometer—Lowest, at 8 A. M. 5° below O—25th day of the month.
Highest at 3 P. M. 50°, 31st.
Mean, - - - 23°.

Winds—variable—very deep snow on the 5th; ground remained covered with it through the month—weather very cold—abundance of sleighing. Niagara frozen over below the falls on the 2d—has not occurred before for 14 years. Thermometer on the 25th at sunrise, stood at 5° below O—at an earlier hour at 8°—colder than it has been for 30 years. In Montreal the thermometer is said to have been at the same time as low as 26°—below O. The Delaware frozen over since the early part of the month—also, New-York bay down as far as Staten Island, on the 26th.

FEBRUARY.

Thermometer—Lowest. at 8 A. M. 25°, 6th day of the month.
Highest, at 3 P. M. 47°, 10 and 13th.
Mean, - - 36°.

Winds—variable—weather rainy and mild early in the month—on the 7th the Delaware free from ice as high as New-Castle, on the 12th it broke up opposite the city, and vessels left the wharves for sea on the next day. Very destructive freshets in the interior of Pennsylvania and Maryland on the 1st. and 2d.

MARCH.

Thermometer—Lowest at 8 A. M. 22°, 19th of the month.
Highest, at 3 P. M. 69°. 16.
Mean, - - - 42°.

Winds—westerly and southerly: weather remarkably mild and pleasant. Deep snow on the night of the 26th, succeeded by cold weather. Angina Tonsillaris unusually frequent in this and last month—also a slight eruptive fever, the eruption less diffused than scarlatina and less distinctly circumscribed than measles—was commonly called the French measles.

APRIL.

Thermometer—Lowest, at 8 A. M. 30°, 3d of the month.
Highest, at 3 P. M. 72°, 24th.
Mean, - - 50°.

Winds—variable, &c.—weather moderate—17th and 18th, hail, rain and snow.

MAY.

Thermometer—Lowest, at 8 A. M. 48°, 5th of the month.
Highest, at 3 P. M. 86°, 29th and 30th.
Mean, - - 61°.

Winds—southerly and easterly—much rain during the latter part of the month—spring more forward than usual.

JUNE.

Thermometer—Lowest, at 8 A. M. 62°, 2d of the month.
Highest, at 6 P. M. 87°, 25.
Mean, - - 74.°

Winds—southerly, with frequent refreshing showers during the early part of the month—the last 10 days very warm and dry—several cases of malignant fever occurred in Baltimore during this period—other southern cities in good health. The fruits of the season are very abundant, and the prospects for grain favourable. Crops of cotton and rice are very much injured in the low grounds in South Carolina by the excessive rains in the last and early part of this month. Locusts made their appesrance in immense numbers in some parts of Ohio and New-York. Bilious remittent fever—with a strong tendency to run into typhus, has again made its appearance amongst the coloured part of our population, and carried off considerable numbers—is principally confined to those who live in crowded and filthy situations, and who are intemperate in their habits—is not considered contagious. In other respects our city enjoys remarkably good health, and has for the last six months.

PENNSYLVANIA HOSPITAL.

Patients remaining in the house April 24th, 1820, - -	209
Admitted from that time to April 28th, 1821, - - -	699
	908
Of these the number Cured, is - - - - -	427
Relieved, - - - - -	124
Removed, - - - - -	59
Delivered safely, - - - -	42
Infants in health, - - - -	43
Eloped, &c. - - - - -	13
Died, - - - - -	47
Removed, - - - - -	153
	908

Managers of the Pennsylvania Hospital, elected May 7th 1821; *for one year*

Samuel Coates,	Israel Cope,
Pattison Hartshorne,	Thomas Morris,
Zaccheus Collins,	Henry Hollingsworth,
Thomas Stewardson,	Alexander Elmslie,
Thomas P. Cope,	Matthew L. Bevan,
Joseph Watson,	Joseph Johnson, s. c.

TREASURER, Joseph S. Lewis.

And on the 14th the following contributors were elected Physicians for the ensuing year.

Doctors Thomas Parke,	Joseph Parrish,
Joseph Harthorne,	Thomas T. Hewson,
John C. Otto.	William Price.

College of Physicians of Philadelphia, July 3d, 1821.

The following officers of the College were duly elected.

President.—Doctor Thomas Parke.
Vice President.—Doctor Samuel P. Griffitts.
Censors.—Doctors William Currie, Henry Neill, Thomas T. Hewson, Edwin A. Atlee.
Treasurer.—Doctor Thomas C. James.
Secretary.—Doctor Samuel Emlen.

Dr. Home has been elected to the chair of professor of Physic in the University of Edinburgh—vacant by the death of Dr. Gregory. The numbers were—for Dr. Home 17—for Dr. Allison 9. Majority 8.

The Medical Lectures in the University of Pennsylvania will commence as usual on the first Monday in November.

JOHN R. COXE, *Dean of the Faculty.*

OBITUARY.

Died, on the 9th of April last at Stenton, his seat in the neighbourhood of this city, George Logan, M. D. in the 60th year of his age.

LIST OF RECENT EUROPEAN PUBLICATIONS.

Medicine, Anatomy and Surgery.

A Sypopsis of the Diseases of the Eye, and their Treatment. By B. Travers, F. R. S. &c. &c. 8vo. with coloured plates. Price 1*l.* 5*s.*

A Dissertation on the Treatment of Morbid Local Affections of Nerves. By Joseph Swann, member of the Royal College of Surgeons, London, 8vo. Price 10*s.*

An Inquiry into the Nature and Treatment of Gravel, Calculus, and other Diseases. By Wm. Prout, M. D. &c. 8 vo.

A Treatise on Diseases of the Liver and Digestive Organs, &c. By J. Thomas, M. D. 8vo.

Practical Observations on Midwifery; with a Selection of Cases. Part I. by John Ramsbotham, M. D., Lecturer on Midwifery at the London Hospital, &c. &c. 8vo.

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Transactions of the Associations of the Fellows and Licentiates of the King and Queen's College of Physicians in Ireland. Vol. 3.

A Manuel of the Diseases of the Human Eye. Intended for Surgeons commencing Practice. From the best National and Foreign works; and in particular those of Professor Beer; with the observations of the Editor, Dr. Charles H. Weller Berlin, 1819. Translated from the original German Work, and illustrated with cases and observations. By George Montreath, M. D. &c. &c. Illustrated with Plates. 2 Vols. Price 30*s.*

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eral Remedy of Great Power in Cases of Inflammatory Disease, &c. By Thomas Haden. 8vo. Price 4*s*.

Observations on the Climate of Penzance and the District of the Land's End in Cornwall; with an Appendix, &c. &c. By John Forbes, M. D. 8 vo. Price 2*s*. 6*d*.

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A Treatise on Indigestion and its Consequences, commonly called Nervous and Bilious Complaints; with observations on the organic Diseases in which they sometimes terminate. By A. P. W. Philip, M. D. &c.

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The Quarterly Journal of Foreign Medicine and Surgery, No. X.

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